H IRON AGE

THE NATIONAL METALWORKING WEEKLY July 27, 1950

NIV. OF MICHIGAN
JUL 27 1950
ST ENGINEERING
LIBRARY

Aetna-Standard piercing mill...

Does its hole job on TIMKEN® bearings

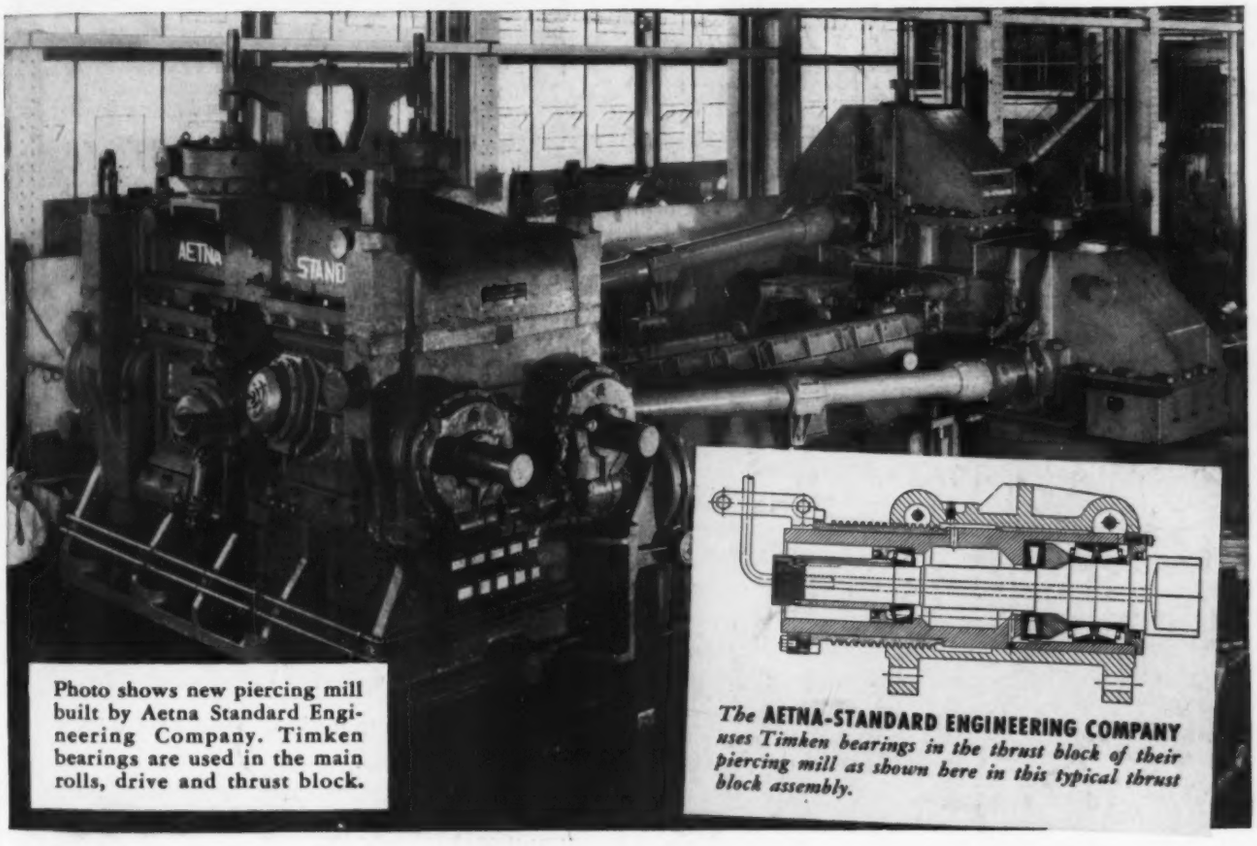


Photo shows new piercing mill built by Aetna Standard Engineering Company. Timken bearings are used in the main rolls, drive and thrust block.

The **AETNA-STANDARD ENGINEERING COMPANY** *uses Timken bearings in the thrust block of their piercing mill as shown here in this typical thrust block assembly.*

TO carry the heavy loads of the piercing operation, this Aetna-Standard piercing mill is equipped with Timken® bearings on the 4500 h. p. gear drive, on the main rolls and in the thrust block. Timken bearings permit rapid acceleration, take radial and thrust loads in any combination and reduce maintenance to a minimum.

Line contact between the rollers and races of Timken tapered roller bearings provides maximum load-carrying capacity. Gears and shafts are held in alignment, reducing wear. Manufactured to extreme precision and finished to incredible smoothness, Timken bearings virtually eliminate friction. Tighter closures are permitted and lubricants are more effectively retained.

No other bearing gives you *all* the advantages you get with Timken bearings. Whether you buy or build machinery, look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton, 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

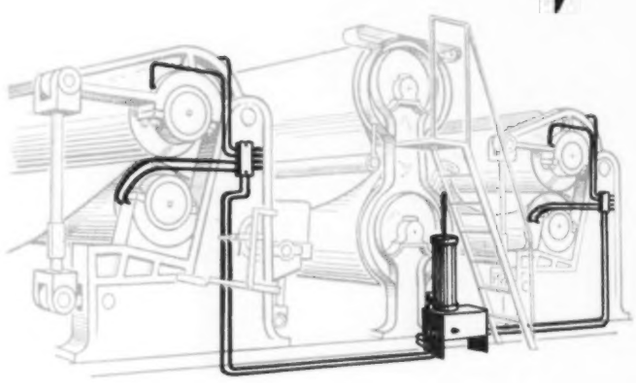
NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ⊕ AND THRUST —⊕— LOADS OR ANY COMBINATION

18% less h.p. load with Farval lubrication

IN the manufacture of paper, as the wet pulp travels through the rolls of the Kamyr press, pressures run up to 2700 pounds per inch. Lubrication by hand is usually accompanied by a noticeable power drag. Lubricant is wasted and shutdowns for bearing repair invariably follow.

To insure continuous, uniform lubrication of its Kamyr press, a Canadian pulp mill installed Farval Centralized Lubrication. An immediate reduction of bearing friction brought a substantial reduction in power consumption. In fact, recording charts on the press show that when the Farval system was installed the horsepower load dropped as much as 18%.

FARVAL—*Studies in Centralized Lubrication* No. 112

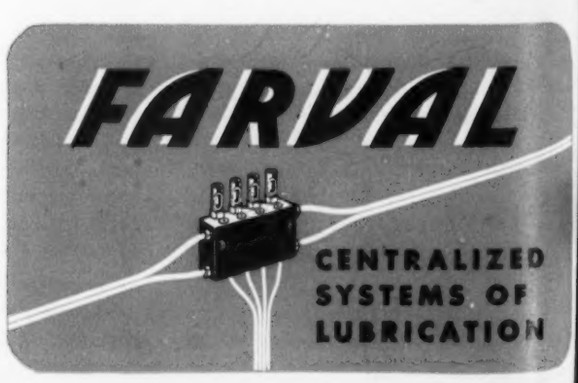


On these press rolls, as on hundreds of other rolls—calendar stacks in paper mills—rubber mills—steel and brass rolling mills—Farval has proved its ability to save power, oiling labor, lubricant and bearing expense. Most important of all, it reduces downtime and increases production.

Farval has proven itself in over 20 years of service. It is the original Dualine system of centralized lubrication that others imitate. The Farval valve has only 2 moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Through its wide valve ports, and full hydraulic operation, Farval unfailingly delivers grease or oil to each bearing—as much as you want, exactly measured—as often as desired. Indicators at every bearing show that each valve has functioned. For a full description, write for Bulletin No. 25.

The Farval Corporation, 3252 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

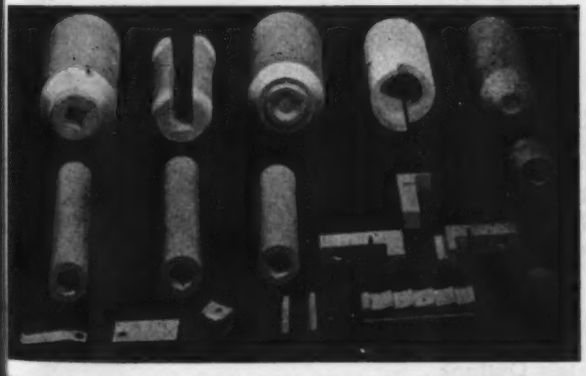


BETHLEHEM STEEL

MANUFACTURING PLANTS · MACHINE SHOPS
SHIPYARDS · FORGE SHOPS · ROLLING MILLS
MINES · FOUNDRIES · FABRICATING WORKS

This tool steel proving ground means better tool performance

This blanking die is made from Lehigh H, our popular high-carbon, high-chrome steel for long production runs. Made in one of our own tool-rooms, this die produces parts from 3/16-in. steel plate for our weldment shop at the Bethlehem, Pa., plant.



These automatic bolt-header parts are typical of the many uses at our Lebanon, Pa., plant for our carbon tool steel (cold-heading quality) and Bethlehem hot-work and shock-resisting steels.

We are makers of tool steel, and large users as well. We use hundreds of tons of Bethlehem Tool Steels every year. Tools and dies, made from dozens of our different grades, are put to work on production jobs in Bethlehem shipyards, mines, machine shops, foundries, forge shops, rolling mills, fabricating works and manufacturing plants.

Knowing exactly how to treat and apply a tool is often just as important as the inherent quality of the tool steel. By making full use of our tremendous proving grounds we've learned a whale of a lot about tool steel. On one job, for example, we may match three grades against each other. In another case we may try several different heat-treatments on one steel in order to achieve the best properties for a shear blade, a tool bit, or a punch. Improved grades of tool steel are often the direct result of long observance of tool performance in our own shops.

By putting tool steels to work among our own family, we gather reliable facts with which to supplement the findings of our laboratories. All of this leads to finding better ways to heat-treat tools, improved techniques in forging, machining, grinding. We pass along this information to users of Bethlehem tool steel—just one of many benefits that result. It's a continuous development program—unmatched in its scope!

☛ *Bethlehem makes all tool steels. In our modern mill depot we stock 23 grades of standard and special-purpose steels for quick delivery to our distributors and mill customers.*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation.

Bethlehem ULTRASONIC TESTED **Tool Steel**

BUSINESS STAFF

GEORGE T. HOOK
Publisher

B. H. Hayes
Production Manager

O. L. Johnson
Director of Research

Charles T. Post
Manager Circulation and Reader Service

J. R. Hight
Promotion Manager

Editorial, Advertising and Circulation Offices
100 E. 42nd St., New York 17, N.Y., U.S.A.

Regional Managers

B. L. Herman
Philadelphia 39
Chilton Bldg.

Peirce Lewis
Detroit 2
103 Pallister Ave.

C. H. Ober
New York 17
100 E. 42nd St.

Robert F. Blair
Cleveland 14
1016 National City Bank Bldg.

Stanley J. Smith
Chicago 3
1134 Otis Bldg.

J. M. Spackman
Pittsburgh 22
814 Park Bldg.

Paul Bachman
West Hartford 7
62 LaSalle Rd.

R. Raymond Kay
Los Angeles 28
2420 Cheremoya Ave.

Circulation Representatives
THOMAS SCOTT
JAMES RICHARDSON

One of the Publications Owned and Published by
CHILTON COMPANY
(Incorporated)
Chestnut and 56th Sts.
Philadelphia 39, Pa., U. S. A.

OFFICERS AND DIRECTORS

JOS. S. HILDRETH, President
EVERIT B. TERHUNE Vice-President
P. M. FAHRENDORF Vice-President
G. C. BUZBY Vice-President
WILLIAM H. VALLAR, Treasurer
JOHN BLAIR MOFFETT, Secretary
HARRY V. DUFFY D. ALLYN GARBER
GEORGE T. HOOK MAURICE E. COX
FRANK P. TIGHE TOM C. CAMPBELL
L. V. ROWLANDS
GEORGE MAISWINKLE, Asst. Treas.

Member, Audit Bureau of Circulation

ABC

Cable Address "Ironage" N. Y.

Copyright, 1950, by Chilton Company (Inc.)

THE IRON AGE

CONTENTS

Editorial

Give Them a Chance 7

News Interpretations

Newsfront 11
The Iron Age Summary 15
Machine Tool Highspots 29
On the Assembly Line 46
West Coast Progress Report 51
The Federal View 53

Regular Features

Dear Editor 20
Fatigue Cracks 24
Free Publications 34
New Production Ideas 35
Iron Age Introduces 42
The Economic Side, J. S. Lawrence 84
Construction Steel News 90
Dates to Remember 92
The Clearing House 126

Technical Articles

Combination Quench Reduces Aluminum Warpage 55
Modified Charging Method Prolongs Battery Life 58
Alloys Widen Use of Titanium 60
Plating Range Tests Improve Plating Baths 63
Gasoline Antioxidant Used in Coke Plant 67
Induction Unit Speeds Carbon Analysis 68
New Books 72

Spot News of Industry

Offers Billion Dollar Freight Car Program 77
Industrial Shorts 78
Rules Needed In Judging Military Orders 79
Steel to Add 6,363,000 Ton Capacity by '52 80
Kaiser Files Plan to Swell Fontana Output 83
Alcoa Allocates; Reynolds Rescinds Boost 85

Markets & Prices

Market Briefs and Bulletins 101
Nonferrous Metals Outlook 102
Nonferrous Prices 103
Iron and Steel Scrap Market 104
Iron and Steel Scrap Prices 106
Comparison of Prices 108
Steel Prices 110
Stainless Steel, Pipe and Tubing Prices 112
Warehouse Steel and Pig Iron Prices 113
Miscellaneous Steel Prices 114
Ferroalloy Prices 116

Index to Advertisers 135

JULY 27, 1950 • • • VOL. 166, No. 4

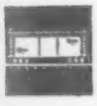
Special Article

Alloys of titanium at strength levels of 150,000 psi and higher are finding wide industrial application. Producers are rapidly expanding their production facilities to meet the ever increasing demand. Aircraft applications are taking a big portion of the sheet output.—p. 60.

Issue Highlights

A combination "fog" and water quench for aluminum parts developed by Northrop Aircraft reduces warpage. Physical properties are equal to those developed by plain water quenching. Decreased warpage has reduced straightening time and saved approximately $24,000 per year.—p. 55.

A modified constant voltage charging method, properly used, results in longer storage battery life. Careful charging eliminates battery overheating, avoids loss of battery capacity and allows daily operation at full power.—p. 58



Prudential Life Insurance Co. is backing a plan to build and lease 100,000 new type freight cars. General American-Evans will help. In today's market it would be impossible to obtain the 2.3 million tons of steel needed for the plan—except by allocation.—p. 77.

Although steel sales people are rarin' to expedite anything vital to the country's defense they are sorely handicapped by a lack of rules from Washington governing distribution. Steel wants the government to provide machinery for determining what is essential, whose quota should be raised, and whose should be cut.—p. 79.

At government request Kaiser Industries, Inc., filed a plan for raising annual capacity of Fontana Steel plant by 700,000 ingot tons. Plan for New England steel mill also gets encouragement from Washington. Meanwhile, steel firms report plans for 6,363,000 ton capacity boost by 1952.—p. 83.

Coming Next Week

A special study of Russia's metallurgical resources shows firm steel industry. Main production and consumption are in the Ukraine and Ural areas. Few standard alloy steels are being produced and most tool steel production is of the straight carbon type. Beneficiation of iron ore is increasing.

EDITORIAL STAFF

TOM C. CAMPBELL
Editor

G. F. Sullivan
Managing Editor

D. I. Brown
Feature Editor

W. V. Packard
News-Markets Editor

G. F. Elwers
Machinery Editor

F. J. Winters
Associate Editor

W. I. Van der Poel, Jr.
Art Editor

H. W. Van Camp
Associate Editor

Stephen Baur
Associate Editor

W. Czygan
Associate Editor

Ted Metaxas
Assistant Editor

R. L. Hatschek
Assistant Editor

Regional Editors

E. C. Beaudet
Chicago 3
1134 Otis Bldg.

John B. Delaney
Pittsburgh 22
814 Park Bldg.

John Anthony
Philadelphia 39
Chilton Bldg.

W. A. Lloyd
Cleveland 14
629 Euclid Ave.

W. G. Patton
Detroit 2
103 Pallister Ave.

Osgood Murdock

R. T. Reinhardt
San Francisco 3
1355 Market St.

Eugene J. Hardy

Karl Rannells

George H. Baker
Washington 4
National Press Bldg.

Correspondents

J. S. Lawrence
New York

N. Levenson
Boston

Fred L. Allen
Birmingham

Roy Edmonds
St. Louis

James Douglas
Seattle

Herbert G. Klein
Los Angeles

F. H. Harley
London

F. Sanderson
Toronto

Chilton Editorial Board
PAUL WOOTON
Washington Representative

Indexed in the Industrial Arts Index and the Engineering Index. Published every Thursday by the *CHILTON CO. (INC.)*, Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class matter Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Western Hemisphere Countries $15; other Foreign Countries $25 per year. Single Copies 35¢. Annual Review Number, $2.00.

ONE MAN operates the

ORTON

AERO-CRANE

MAN–

Effortless ORTON Air Control enables ***one man*** to handle loads that eat up the time of an ***entire yard crew!***

MUSCLE–

Because ***that one man*** uses inexhaustible, free ***air power*** instead of muscles, he's ***still*** fresh, ***efficient*** and ***fast*** at the end of an 8-hour day!

MONEY–

Wise engineers say there is only ***one*** sure way to beat rising costs: use ***less*** labor; use ***more efficient*** labor!

Re-read the paragraphs above, then write for catalog 80.

ORTON
Crane and Shovel Co.
608 So. Dearborn Street
Chicago 5 • Illinois

Editorial

INDUSTRY VIEWPOINTS

Give Them A Chance

WE hear a lot these days about lack of business experience in government. It may be in Congress or it may be in the Administration.

What we need is more business in government. What we need are more businessmen in government; people who have been through the mill; people who have won their spurs in industry by hard work, experience and brains. We need the advice and the government needs the advice of experts who have learned the hard way.

As things look now our government will continue to be the biggest business in history. The amount of money involved in one day's running of the government staggers the imagination. There are ways and means for improvement. But these will not come from people who have no practical knowledge of business at work; or from people who have only the classroom or the bull session approach; or from people who have not made good in the tough struggle.

It won't come from people who have landed a soft government job; or from people who have some queer quirk in their nature which in a government job allows them the outlet for power they would not otherwise have.

The only way to get businessmen in government is to permit companies to make up the difference between what the government job pays and what the candidate is receiving in his own company.

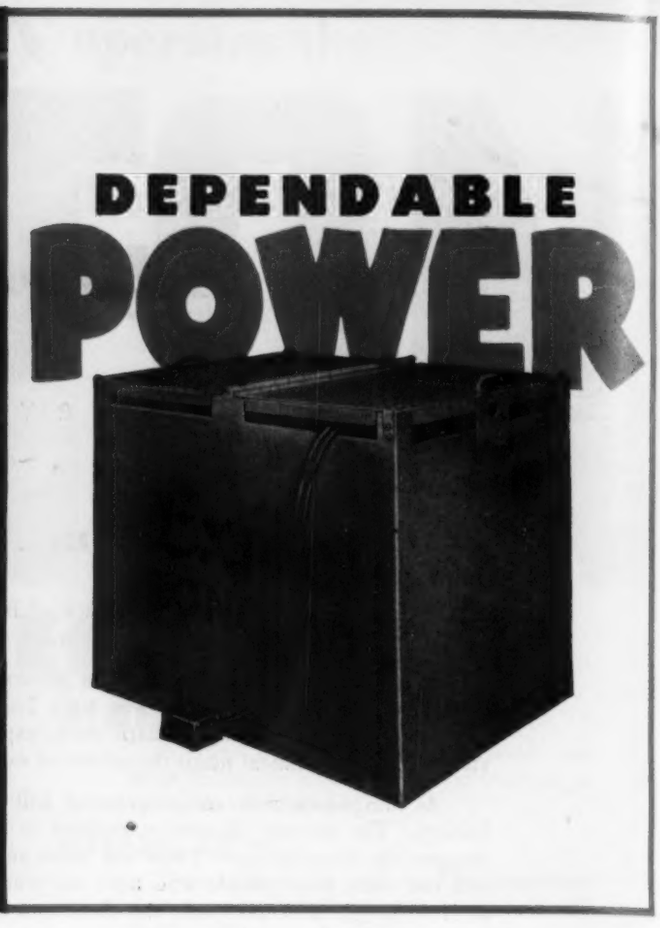
This was done during World War II. Why not now? We need it at once. To assume that, because a man is allowed to make what he is worth by having business and government make up his pay, he will operate in favor of his company or group rather than his country is taking a pretty dim view of industrialists. It just doesn't add up that way.

There has been a lot of talk about what a beating businessmen would take if they went to temporary government jobs. Sure they would. But if they were paid to do a good job they would do it. If mud was slung at them while in a government post it wouldn't be much worse than what they take every day. But until we have total mobilization they won't take a job in Washington at a low pay and then have to take all the guff that goes with it.

Congressmen can do all the questioning they want to when a man is recommended for an important government post. But Congress ought to look to the ranks of business for outstanding men for government service at a pay commensurate with their ability. Let's face the facts; we need such men!

Tom C. Campbell

Editor



You get LOWEST COST OPERATION with

Exide-Ironclad Battery POWER

Exide powered electric industrial trucks assure the lowest costs for truck operation . . . costs for recharging run as low as 2 cents per KWH of battery capacity . . . seldom more than 15 cents per shift to maintain. You gain in many other money-saving ways when your trucks are powered by Exide-Ironclad Batteries. You get:

- instant surge of power to meet all demands in *start-stop, lift-and-shift* manipulations . . . plus finger-tip control for split-second handling, easy maneuvering, accurate spotting.
- full-shift availability, with trucks handling as much tonnage during last hour as first, and at practically no difference in speed.
- high truck availability—freedom from mechanical troubles, and with no unscheduled periods of down time.
- easy to keep charged—batteries absorb a very high percentage of charging current.
- exceptionally long life—proved on more than 100,000 heavy-duty jobs.
- inherent safety—quiet operation with less worker fatigue; no vibration to jar work in transit; no oil seepage on floors to create accident hazards.
- wide range of sizes for every make of battery-electric truck; compact construction permits standardization.

Combined, these and other Exide-Ironclad characteristics assure you dependable performance, day after day . . . for years.

Exide-Ironclad Batteries are the Best Power Buy . . . AT ANY PRICE

Write for more facts and FREE copy of Exide-Ironclad Topics. It contains latest developments in materials-handling...shows actual case histories.

"Exide-Ironclad" *Reg. Trade-mark U.S. Pat. Off.*

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

1888 . . . DEPENDABLE BATTERIES FOR 62 YEARS . . . 1950

NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► The Korean war has added new zip in New England to the drive for a local steel mill. It has also won additional support in Washington for the project. It is understood that W. Stuart Symington, chairman of the National Security Resources Board, has been favorably impressed by the idea and has given the green light to its backers--on an unofficial basis.

► Although no definite new aircraft orders had been placed by last week, the past few weeks have seen a sharp spurt in parts and material ordering by aircraft manufacturers. Theory is they have been told to turn out what orders they have as fast as they can—certain that more will be forthcoming soon.

► The steel industry's huge expansion program (planned before the Korean War) should silence squawks of government planners that the industry has been slow to expand--but it probably won't. But war may accelerate some of the programs if materials can be speeded up.

► Ti150A, the Allegheny Ludlum titanium alloy, is now being tested by the Air Force for sheet applications. The P. R. Mallory titanium alloy has been accepted as a standard for forging material. It is a 5 pct Cr, 3 pct Al alloy; Ti150A is a 2.8 pct Cr, 1.3 pct Fe alloy of titanium.

► A new conversion unit that can be attached to standard bicycles will soon be on the market. It is a 3-speed synchromesh transmission which permits preselection of the desired gear by setting a control and momentarily relieving pedal pressure. The transmission automatically does the rest.

► Mixtures of argon and helium gas are now being used for inert atmosphere welding. It is believed that helium improves the arc characteristics of straight argon gas.

► An Eastern manufacturer reports development of a highly concentrated alkaline compound for use in etching aluminum without forming hard sludge deposits on the bottom of the etching tanks.

► There were 56 bidders on a recent fabricated structural steel job in South America. Only about half a dozen of the bidders were United States companies.

► A magnesium-cuprous chloride battery activated by tap water has been developed by the Army Signal Corps. It may replace the 1946 magnesium-silver battery, also developed primarily for high altitude meteorological research. It is less expensive, has long storage life and weighs less than a pound.

► A 235,000-mile test run on a Plymouth showed that the addition of colloidal graphite to the engine oil gave an average saving of 30 pct in oil and 10 pct in gasoline.

► In the years ahead foundrymen may have to look carefully at this fact: With modern tooling setups, steel, aluminum and magnesium may be machined faster than cast iron. If this situation continues, some engineers feel that gray iron will loose a substantial share of its market to these other metals.

Eaton Permanent Mold Gray Iron Castings

for HYDRAULIC APPLICATIONS

- **Free machinability**
- **Dense, homogeneous structure**
- **Freedom from leakage under pressure**
- **Machines to high, mirror-like finish**
- **Properly annealed; no growth or distortion after machining**

Send for your copy of the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."

EATON MANUFACTURING COMPANY

CLEVELAND, OHIO

FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

Steel — A Whirlpool of Frenzy

Industry Eager to Cooperate

But Action by Government Lags

The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

THE slow motion probing of the Administration for a set of "painless" controls has turned the steel market into a whirlpool of frenzy and uncertainty. Steel consumers are frantically trying to build up and balance their inventories. There are plenty of takers for anything that looks like steel, and price consciousness is fading fast.

It is true that military orders have been slow in coming—that increases so far have been small compared with total production. But it is equally true that a sizable military buildup is definitely on the way. Steel producers and consumers are correct in anticipating: (1) Allocations and priorities, (2) further inflationary trends, (3) chronic shortages of materials and products for months to come, and (4) a continuing onslaught of orders for finished goods.

In view of this, no one can blame the manufacturer for trying to get more steel—especially when he has not been provided with rules governing the procurement battle. This has turned the race for steel into a mad scramble, with no holds barred. It is every man for himself and the devil take the hindmost.

Who Should Get Steel?

Steel people are rarin' to expedite anything vital to the country's defense, but they find themselves facing a dilemma. What is a military order? Which civilian orders are essential and which are nonessential? Who should get more steel and who should get less? The steel market will keep whirling until these definitions are spelled out, clearly and concisely. Meanwhile the administration fiddles while industry burns.

Although price resistance is disappearing, the gray market is not expected to bloat to its 1948 proportions. The big mills have been maintaining very tight control over their outlets. They know where their steel is going and for what it is to be used. Foreign steel is now the gray market operator's best source. Here are some current gray market prices: Cold-rolled sheets, $180 to $210 per ton; hot-rolled sheets, $160 to $200; ingots, $75 to $80.

Consumers are projecting their production on the basis of what steel they can get. They are ordering all other items going into their products in proportion to the availability of the tightest steel item.

New Fire Under Steel Pot

Some plate fabricators are taking those jobs which will give them the greatest amount of shop labor and consume the least steel. They do this to make a greater profit and also to keep employees on the payroll. The heating, ventilating and air conditioning industries report record breaking orders, and hand tool manufacturers had their best month in history during June. Rural dealers in agricultural equipment are selling out their complete stocks in all standard items and in some specialized items not needed for 3 to 5 months.

There are indications this week that the administration may be preparing to light a new fire under the already-bubbling steel capacity pot. At government request, Kaiser Industries, Inc., filed with the National Security Resources Board and Munitions Board a plan to raise its annual capacity at Fontana by 700,000 ingot tons. The project would cost about $100 million.

While this news was still in the making, 13 of the nation's leading steel companies reported huge capacity expansion plans. Their combined expansion programs will add 6,363,000 ingot tons to their annual capacity by the end of 1952 at an estimated cost of $1 billion. This extends by one year a previous survey by THE IRON AGE which showed that the industry was planning to expand its capacity more than 4 million tons this year and next.

Steelmaking operations this week are scheduled at 99.5 pct of rated capacity, off half a point from the previous week. Mills are still handicapped by vacations but are expected to boost production past the century mark again as soon as their work forces are intact.

(Nonferrous summary, p. 102)

ELECTRONIC CONTROL FOR RESISTANCE WELDING

SPEEDED FABRICATION 100% CUT REJECTS 75%

on cars for G-E **MORE POWER TO AMERICA** *train*

Seam welding car roof at Pullman-Standard with aid of G-E resistance welding controls.

Completed car for G-E More Power to America exhibit train made for General Electric by Pullman-Standard.

Pullman-Standard Car Manufacturing Company, builder of the cars for the General Electric Apparatus Exhibit train now touring the country, has long been an enthusiastic user of resistance welding. This progressive company was one of the first to realize the savings in weight, increase in strength, and faster production that result from the use of this process. This company has also studied and capitalized on technical improvements over the years.

It's CONTROL That Counts

Pullman-Standard has kept pace with progress in welding control. Today, Pullman-Standard uses modern G-E automatic electronic control which permits very close adjustment of heat and timing. Quality of welds is greatly improved. Compared with earliest control, the equipment now being used speeds fabrication on certain jobs 100%, cuts rejects 75%.

For Your CONTROL—Come To General Electric

Trained G-E engineers will be glad to discuss control problems with you and your resistance welding manufacturer, and from the wide variety of G-E control available can supply the right control for you. ***Apparatus Department, General Electric Company, Schenectady, N. Y.***

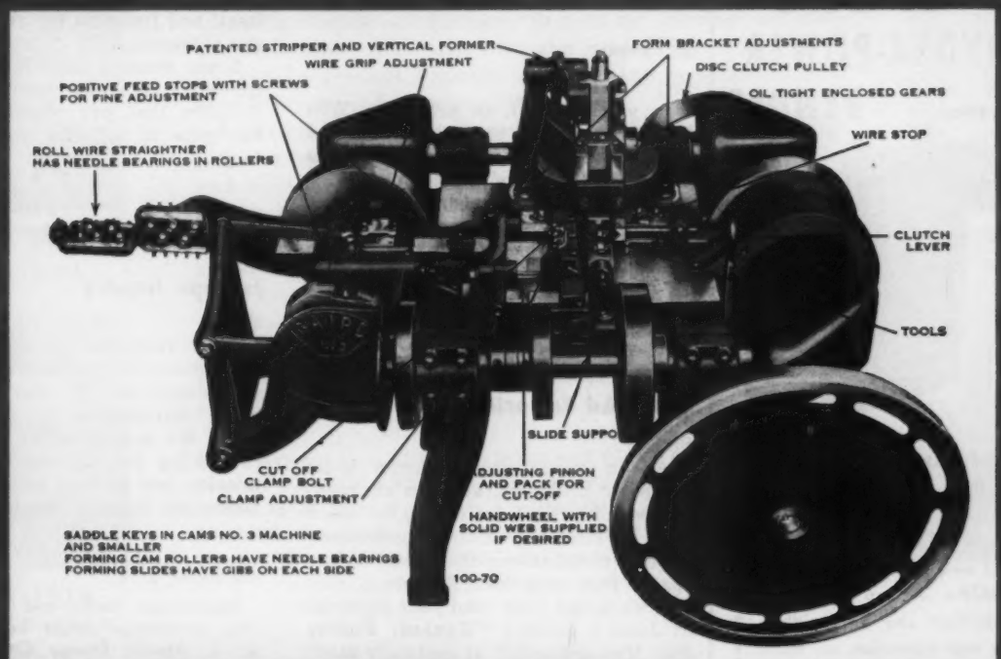
SEE "THIS IS RESISTANCE WELDING"—
General Electric's More Power to America full-color movie. Contact your utility, resistance welder manufacturer, or the nearest G-E office.

GENERAL ELECTRIC

645-52C

Automatic WIRE AND RIBBON METAL FORMING MACHINES

For High Production of those Wire and Ribbon Metal Articles which can be made to best advantage on a four slide machine.
By this we mean without having to use "cluttered up" tooling.



BAIRD Automatic MULTIPLE TRANSFER PRESSES

For those parts made from ribbon metal which can be made to best advantage on this Baird Multiple Transfer Press.

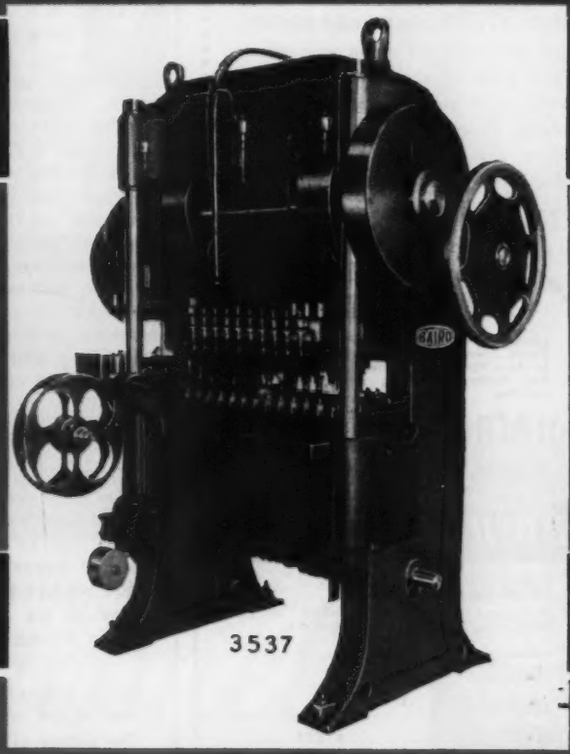
Tools plainly visible and easily accessible.

Different combinations of crank and cam gate shafts, roll and slide feeds, Dc to best suit the job at hand.

5 SIZES

Send your samples and prints and quantity requirements and

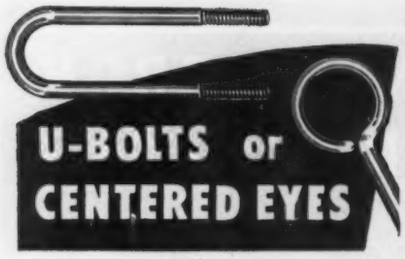
"ASK BAIRD ABOUT IT"



THE BAIRD MACHINE COMPANY

1700 STRATFORD AVENUE • STRATFORD, CONN.

Baird also builds High Production Machine Tools, Multiple Spindle Chucking Machines, Grinders, Oblique and Horizontal Tumbling Machines.



U-BOLTS or CENTERED EYES

rapidly duplicated with

di-acro HYDRA-POWER BENDER

At last—a PRODUCTION BENDER that "bends them all" — tubing — angle — channel — extrusions — moulding—strip stock—and of course —all types of solid materials. U-Bolts and Eye Bolts are just two examples of the shapes that can be rapidly produced in one operation on this hydraulic power bender.

The Di-Acro HYDRA-POWER BENDER can be easily set up in your plant for a great variety of forming operations or it can be delivered completely tooled for speedy production of a specialized part. Investigate this universal machine before you buy any "single purpose" bender.

Send For 40-Page Catalog

giving full details on Di-Acro Hydra-Power Benders, also Di-Acro Powershears, Brakes, Rod Parters, Notchers, and Punches.

DI-ACRO PRECISION MACHINES DIE-LESS DUPLICATING

MAIL COUPON TODAY

O'NEIL-IRWIN MFG. CO.

O'NEIL IRWIN MFG. CO.
302 8th Ave., Lake City, Minn.

Please send 40-page catalog including "Die-Less Duplicating" Engineering Service offer.

NAME .....

COMPANY .....

ADDRESS .....

CITY .....STATE .....

Dear Editor

Letters from Readers

Si, Senor

Sir:

In your journal, an article by William Jennings on the use of colloidal graphite as a diecasting lubricant was published sometime in 1936 or 1937.

As the information contained in the article is of interest to our sales representative in Spain, we would like to reproduce the article in Spanish.

F. G. KAY
Sales Manager

Acheson Colloids Ltd.
London, England

Want Ad Editorial

Sir:

As an Advertising Manager beset by many problems, such as sharpening pencils, etc., I don't have too much time to read the editorial comments of the publications in which I buy space. But something happened this last week and I did read your editorial of June 1 entitled "Wanted: Future Top Management." It certainly made me chuckle as I read it, but doggone if after reading it I didn't become slightly ornery with disagreement!

All in all, I feel you've made an indictment of present top management. Because you intimate that they're too worn out or tired to cope with today's economic problems. Sure we're leading a fast pace now . . . but at what time in our history didn't we lead one as fast? That's what has made us great—isn't it? And those who despair over it must step down and let someone younger take over! I think too, you're selling short our nation's young men with ability to take over and win the fight if ever given half a chance. . .

R. H. WARENECK

Glen Ellyn, Ill.

Sir:

We like your editorial article on future top management so well we would like to reprint it in our 8-p. internal house organ here in Detroit. The circulation is about 600. That's a honey of an article, the best we've seen in a long time.

F. FARRIS
Editor: C. R. News

Chicago Rawhide Mfg. Co.
Detroit Plant

The picture of what the man ought to be came from talking to, knowing and working with people. The idea was to try and get present management to take a cold look at what is required. To take a look at what they are really doing. Then by gad take a chance and train, promote and have confidence in the younger ones coming up. Present top management wasn't indicted unless the shoe fits.—Ed.

Back Talk Sanction

Sir:

Regarding your editorial "What Goes On Here?" in the June 22 issue, the closing sentence of the last paragraph. Big business had better bestir itself and listen to the voice crying in the wilderness.

I am amazed that Inland Steel is the only company on record in the industry that you represent who had the guts to tell the snoopers where to go.

L. S. PETERMAN
Director of Industrial Power Development

Southern California Edison Co.
Los Angeles

Isotope Inquiry

Sir:

Your reference to the availability of radioactive isotope Cobalt 60, in the Newsfront of June 29, was our first introduction to this splendid offer. We are certainly interested in contacting the Atomic Energy Commission just as soon as we find out to whom our inquiry should be directed.

J. J. BUCZYNSKI
Metallurgical Dept.

Taylor Instrument Co.
Rochester, N. Y.

Application blanks and instructions for their completion should be secured from U. S. Atomic Energy Commission, Oak Ridge Operations, Post Office Box E, Oak Ridge, Tenn. Attention: Isotopes Div.—Ed.

Still Pulling

Sir:

We would appreciate receiving as soon as possible a reprint of the paper by J. J. Crowe and G. L. Walker on economies through the use of high purity oxygen in cutting, THE IRON AGE. March 19, 1925.

L. P. POOL
President

Air Products, Inc.
Allentown, Pa.

A copy of this article, entitled "Oxygen Purity and Cutting Efficiency" has been sent.—Ed.

Electronics Data

Sir:

Please advise us if there are reprints available of the article, "Electronics Speed Core Drying," by J. Dawson, which appeared in the May 4 issue. If they are not available, will you please give us permission to photostat this article for distribution to our industrial salesmen and selected customers?

F. B. MAHON
Supervisor, Sales Promotion

Duquesne Light Co.
Pittsburgh

We have no reprints available, but you may reproduce the article.—Ed.

...the RESPONSIBILITY that's delivered with your Lectromelt furnace

SINCE 1940
Roy C. Squires

SINCE 1926
Charles W. Baltzer, Jr.

SINCE 1929
John Muszynski

Moore, inventor of the Rapid Lectromelt Furnace, inaugurated the plan many years ago. Engineers, skilled in applying electric arc furnaces to melting, refining, smelting and reduction, were sent into the field. Their assignment, to help Lectromelt Furnace users get into production most expeditiously and economically.

Lectromelt's field engineers, shown here, are known to plant operators everywhere. Talk to an electric furnace man and he'll cite cases of where and how our roving representatives have helped them.

Lectromelt Furnaces offer you rapid top-charging, high-speed melting, accurate control of quality, low-cost operation. Lectromelt field engineers help you keep abreast of the latest developments in the use of your furnace.

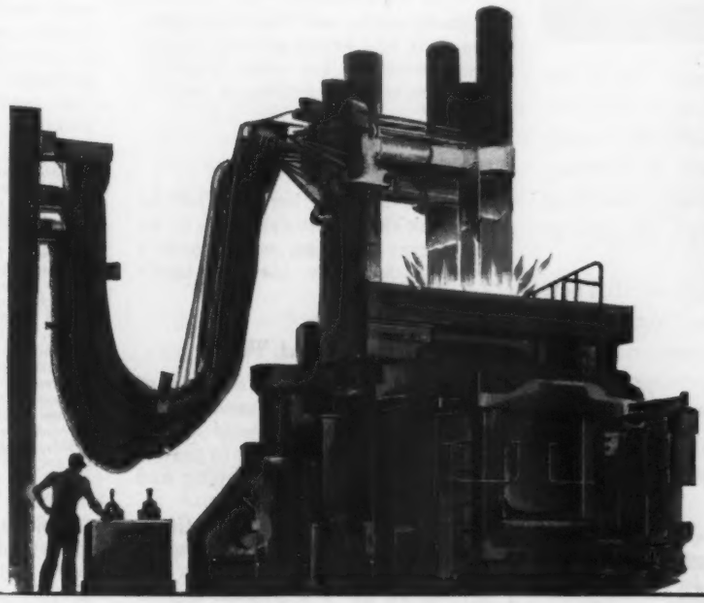
For further data, write for Bulletin No. 7. Pittsburgh Lectromelt Furnace Corporation, 312 32nd Street, Pittsburgh 30, Pennsylvania.

Manufactured in... CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2... ENGLAND: Birlec, Ltd., Birmingham... SWEDEN: Birlec, Elektkougnar A/B, Stockholm... AUSTRALIA: Birlec, Ltd., Sydney... FRANCE: Stein et Roubaix, Paris... BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege... SPAIN: General Electrica Espanola, Bilbao... ITALY: Forni Stein, Genoa.

SINCE 1922
Frank I. Durie

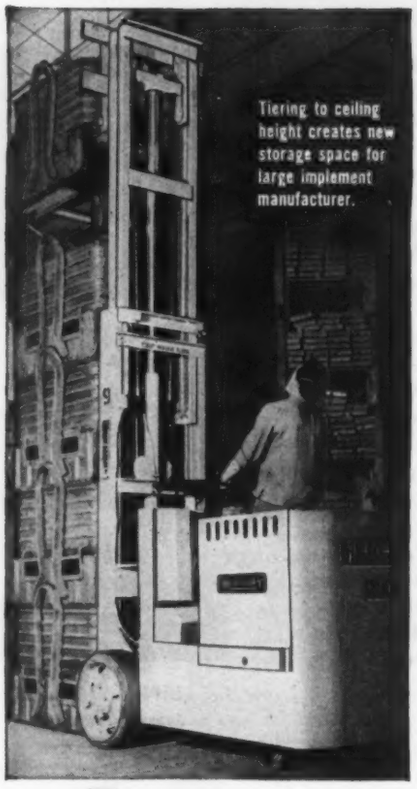
SINCE 1923
Joseph Charnock

SINCE 1942
A. Ospina Racines



WHEN YOU MELT... MOORE RAPID *Lectromelt*

5 TIMES greater inventory handled with MERCURY fork trucks



Five times greater inventory handled with no appreciable increase in plant facilities—that's the record established when a fleet of Mercury Fork Trucks replaced former handling methods for this large implement manufacturer.

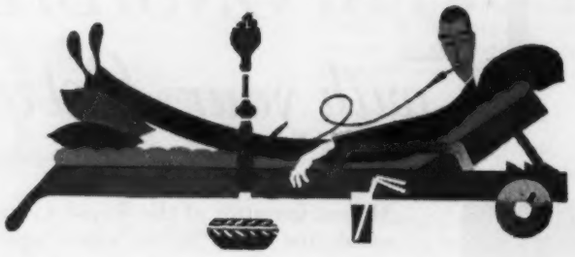
Tiering to ceiling height created new storage space...unit handling of 2500-4000 lb. loads expedited materials from receiving, through processing to shipping. It'll pay you to consult Mercury's 38 years' handling experience. Ask a Mercury Sales Engineer to call.

Take it up with MERCURY
38 years handling experience

THE MERCURY MANUFACTURING CO
4144 S. Halsted St., Chicago 9, Illinois

FREE: New 52 page catalog
Illustrates and describes complete Mercury line of Tractors, Trailers, Lift Trucks. Request your copy on company letterhead, today.

TRACTORS TRAILERS LIFT TRUCKS



Fatigue Cracks

By CHARLES T. POST

Robbery Detail

War jitters strike far deeper than buying sprees on sugar, nylons and tires.

A woman called a Brooklyn bank shortly before opening time, asked to speak to the vice-president. His secretary, in her best official tones, murmured, "I'm sorry but he's tied up—." The woman screamed back, "I'll call the police," without waiting to hear the trite "—in conference." Next thing the bank knew, four radio cars screamed up to the front door, and eight cops crashed in with drawn guns.

To be on the safe side these days, the girls had better go back to the less glamorous but more truthful, "He's next door getting a cup of coffee."

Definition

An unidentified leg man left on our desk this latest definition of an executive: "A man who wears a worried look on his assistant's face."

Washington At War

On July 10, Rep. McMillan of South Carolina introduced House Bill No. 9047 which would amend District of Columbia laws to permit the regulation of the "keeping and running at large" of goats.

On July 16, the Economic Cooperation Administration issued a 2-page press release heralding the arrival at the Washington Zoo of a Cretan goat, a token of appreciation for Marshall Plan aid to Greece.

Even in wartime, the various arms of the government seem to have a hard time getting together. Rather than the goat offending Washington, as Rep. McMillan implies, Congress may well offend the goat and our grateful Greek friends to boot.

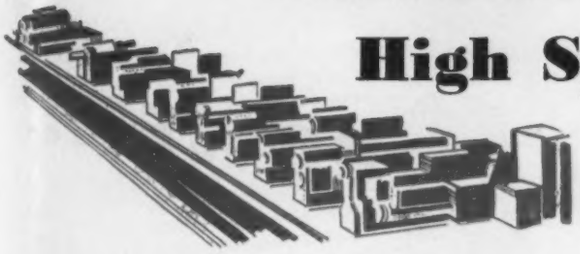
Puzzler

In the June 29 issue, we passed along J. S. Coldwell's problem of a cow tied by a 100-ft rope to a post in a fence surrounding a circular 1-acre field, along with his comment that solution was impossible. Then we left placidly on vacation and forgot the whole thing. Upon our return we find the desk stacked high with evidence that nothing is impossible to readers of your favorite family journal, the country's best engineering brains apparently having spent the better part of the Fourth of July holiday tackling the problem, all agreeing on a method that comes up with an answer of about 12,730 sq ft.

Here are the heroes: H. C. Barnes, consulting engineer, Armco Steel; C. E. Blass, manager of planning, Talon, Inc.; George S. Chadwick, Jr., engineering dept., Carbide & Carbon Chemicals Div.; John R. Boyd, chief chemist, James B. Clow & Sons; C. I. Gardner, Orinoco Mining Co.; H. G. Reynolds, chief engineer, San-Equip, Inc.; Howard Fancher, mechanical superintendent's staff, General Electric; E. Cram and R. G. Valentine, metallurgical dept., Great Lakes Steel; W. R. Johnson, Armour Research Foundation; Joe T. Brashears, W. C. Caye & Co., Inc.; Carl R. Simon, Michael Flynn, Inc.; Hollis W. Schuler, American Steel & Wire; Robert W. Mahon, Mahon Hardware Mfg. Co., Ltd.; R. W. Mason, International Nickel; A. C. Wilcox, New York; Bernard B. Glowacki, Washington; and an unidentified genius with Buffalo Stainless Casting Corp.

Several commented that the puzzle would really be hard if the cow were tied outside the fence. Not so. Merely subtract the area inside the field from the total area of the circle. Finally, there was a red faced letter from Mr. Coldwell coming up with the answer, himself, and posing one he *really* thinks impossible except by trial and error: If a farmer wants to give the same cow 10,000 sq ft grazing area, how long should the rope be?

MACHINE TOOL High Spots



Sales Inquiries and Production

By W. A. LLOYD

Rush is On—Machine tool buyers were running for cover this week as the scramble for new machinery threatened to push delivery dates of some machines well into next year.

Obvious reasons for this machinery-buying melee are the Korean War and the recent price increases, which usually squeeze in some business. Also, the bulk of the machine tool industry has had good business for the past 4 or 5 months, and thus had some backlog when the present rush in orders developed. Some sales departments are busily explaining this to customers who were pained to learn that some machines will not be available until next March.

Auto Orders Biggest—According to individual company sources, little if any of this business stems from defense contracts. Biggest single source continues to be the automotive industry.

In Detroit the war scare has undoubtedly had the effect of accelerating new tooling decisions by many business executives. This is exemplified particularly by the growing volume of inquiries from small plants breathlessly asking for a delivery time on a machine that may not even have been considered seriously the previous week.

One result of this kind of buying—which is far from the general practice—is that machine tool deliveries in some instances have jumped from ten to as much as 15 or 20 weeks during the past fortnight.

Spur to Buying—Another factor in the present situation is the threat of higher prices which is reported to have precipitated many tooling decisions that might otherwise have been held up.

Also, some tool buyers are apparently reasoning that it is better to be at the head of the waiting line even though all orders may sooner or later have to give way to a rearmament program.

When It Rains, It Pours—Probably the best comment overheard this week concerning the recent flood of orders came from a business man who said he was reminded of a character who sailed on the ark with Noah.

Looking about him at the vast area of water, Noah's special guest is reported to have said, "Oh Lord, we asked for rain but this is ridiculous."

Orders Give Strength—As a secondary effect of this business, the machine tool industry will be able to get into better shape for war production, if needed.

Some sources believe the "phantom" order or more properly, "tentative production schedules," will be activated to make possible an all-out effort in the shortest possible time. There has been no official word on this, however.

Only in Rumor Stage—Also rumored is a meeting of the machine tool industry advisory committee to the Munitions Board, but thus far, no one has been called. Release of a large volume of defense work by the government might require priorities under present conditions, according to some sales executives.

A possible course of action for government planners would be to approach the machine tool builder and ask him to reserve 25 pct of each lot scheduled for production for government use. Then order boards would be frozen for 90 days.

Flexible Plan—At the end of 90 days, if all the machines are not sold, those remaining could be sold to other buyers. Machine tool builders could be given a list of contractors working on defense orders, for preference. Machines still remaining could be sold at the builders' discretion.

This plan has certain drawbacks, but is probably as fair as any interim measure, short of total mobilization.

Meetings—Two sales conference programs will be held by the National Machine Tool Builders' Assn. in cooperation with the American Machine Tool Distributors. The first, July 31 through Aug. 4, will be held at Cornell University, Ithaca, N. Y., and the second at Purdue University, Lafayette, Ind., from Aug. 21 through Aug. 25.

YOUR FINGER

packs a load of POWER!

Every time you flip a switch or "press a button," you command a tremendous supply of dependable power. In fact, Americans are the most fortunate people on earth when it comes to the electric power that lights and runs their homes and factories. They have more of it, supplied at lower costs, than anyone else on earth. *And the giant share of all this power is generated by COAL!*

To help America's power companies meet the ever-increasing demands for low-cost electric current, America's progressive coal producers provide a dependable supply of specified grades of coal.

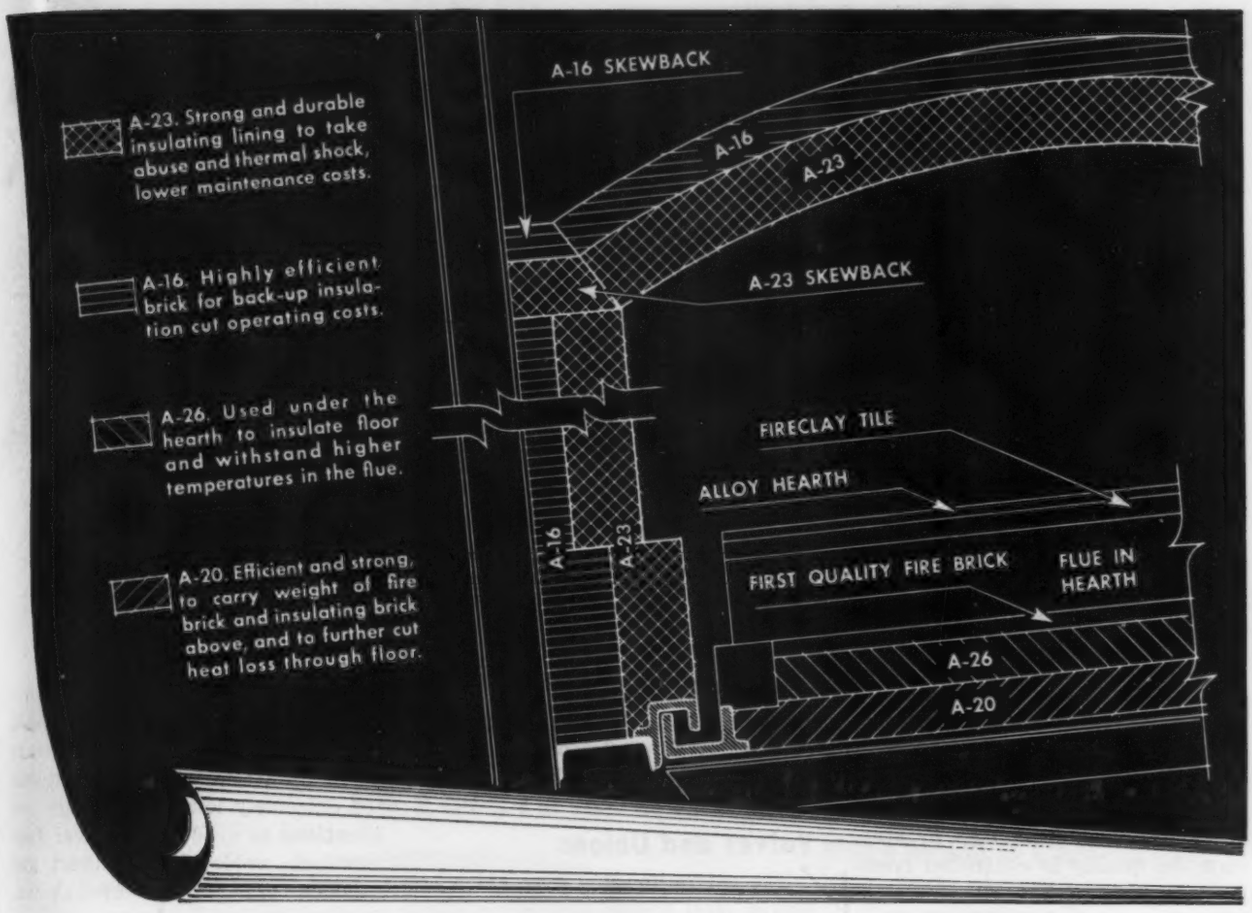
Coals of tested quality are supplied also to scores of other big customers—railroads, steel, paper, cement, chemicals, meat and other food packers—and the coal dealers who serve millions of homes and stores. The coal industry is vigorously at work to provide its customers with an ever better product for ever better utilization and thus a reduction of their fuel costs.

To do this big job efficiently, the producers of coal continue to invest heavily in research, equipment, and methods aimed to reduce production costs while delivering better prepared coals of good quality.

● *To continue most effectively to serve millions of America's homes, as well as its industry and commerce and to be ready to play its indispensable part in providing all the power needed in any national emergency—the coal industry requires only the opportunity to function at its best, in a fair competitive climate, free from governmental interference.*

BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE
A Department of National Coal Association
WASHINGTON, D. C.



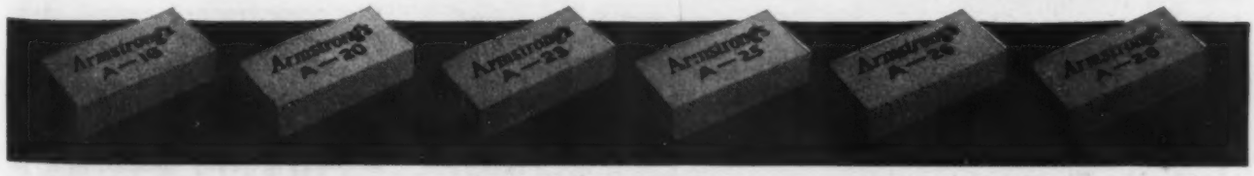
Selecting the right brick for the right place

The right insulating fire brick at the right place can make furnaces more efficient, longer lasting, and less expensive to operate. Service conditions under which various types of insulating brick perform best vary, and brick prices vary, too. All of these factors should be carefully considered in selecting the best brickwork design.

Take a car bottom annealing furnace, for example. Linings are subject to mechanical abuse and have to withstand the thermal shock of frequent door openings and cold loads. Arches are usually of fairly long span, calling for a strong brick construction. Of the six brick in the Armstrong Line, A-23's best meet these demands and still serve as efficient insulation.

To get the maximum in efficiency and to lower costs, the second course backing up the A-23 lining should be A-16. Under the flue in the hearth, Armstrong's A-26 Brick withstand the higher temperatures there. A-20's as back-up insulation will cut heat loss through the car to a minimum.

In its temperature range, every Armstrong Brick is formulated to meet not only the insulation requirements expected of it but also to resist spalling and shrinkage. It must be light in weight yet strong enough to withstand abuse. These qualities vary with brick types, so the next time you have a problem of selecting the right insulating refractory, why not call in an Armstrong engineer. He may help you improve the operation of your furnaces or lower your costs. Call your nearest Armstrong office or write Armstrong Cork Co., 4907 Mulberry Street, Lancaster, Pennsylvania.



ARMSTRONG'S INSULATING REFRACTORIES

FREE USE POST CARD

PUBLICATIONS

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

Cut Cost, Save Time

Information on Eaton Springtites and Sems contained in a new 40-p. catalog points out how these fasteners can eliminate costly practices and save time. Typical applications are shown, as well as engineering drawings, complete specifications and other data on the broad range of sizes and types available. One section of the catalog is devoted to the production of these items, showing step by step how the quality is controlled from start to finish. *Reliance Div., Eaton Mfg. Co.*

For free copy insert No. 1 on postcard.

Welding Accessories

The line of Jackson arc welding electrode holders, ground clamps, cable connectors, splicers and lugs are described in a new 4-p. illustrated folder. Models covering the entire range of uses and preferences in the field of metallic arc welding are shown. *Jackson Products, Inc.*

For free copy insert No. 2 on postcard.

Openhearth Engineering

The scope of the activities of the Loftus organization in designing and building openhearth furnaces is briefly described in a new 4-p. brochure. This literature illustrates the complete line of various sizes of furnaces installed by these engineers, consultants and contractors. *Loftus Engineering Corp.*

For free copy insert No. 3 on postcard.

Stainless-Copper Sandwich

The progress and growth of Rosslyn Metal is contained in a new 16-p. booklet. The material consists of two sheets of stainless steel permanently bonded to a copper core; a flow chart is presented to show the process of manufacture, from raw material to finished product. *American Cladmetals Co.*

For free copy insert No. 4 on postcard.

Valves and Unions

The entire line of Catawissa hot forged steel unions and valves are described in a new 22-p. catalog. Complete data, specifications and prices are given. In addition to picturing the single union swing check and spring controlled check valves, the new catalog presents complete information on this company's new double union full opening swing check valve. *Catawissa Valve and Fittings Co.*

For free copy insert No. 5 on postcard.

Self-Tappers

Benefits derived from use of P-K self-tapping screws are discussed in a new 48-p. catalog. Numerous examples of applications in a wide variety of metal and plastic assemblies are shown, and complete descriptions and specifications for the broad range of screw sizes and types available are given. *Parker-Kalon Corp.*

For free copy insert No. 6 on postcard.

Aluminum Fabricators

In addition to technical data on the physical and chemical properties of aluminum for pressure vessels, a new 12-p. bulletin contains factual information on this company's complete and specialized facilities for the design and fabrication of aluminum. The bulletin discusses more recent developments in the practical use of aluminum for extremely low temperature applications to —300°F. Typical fabrications, welded by the inert gas shielded arc process, are shown. *Welding Engineers, Inc.*

For free copy insert No. 7 on postcard.

Molding Machines

The improved line of J&J molding machines is described in a new 4-p. illustrated bulletin. Various models of jolt roll-over pattern draws are shown, in addition to portable and stationary jolt squeeze and other machines. *Johnson & Jennings Co.*

For free copy insert No. 8 on postcard.

Pump Controls

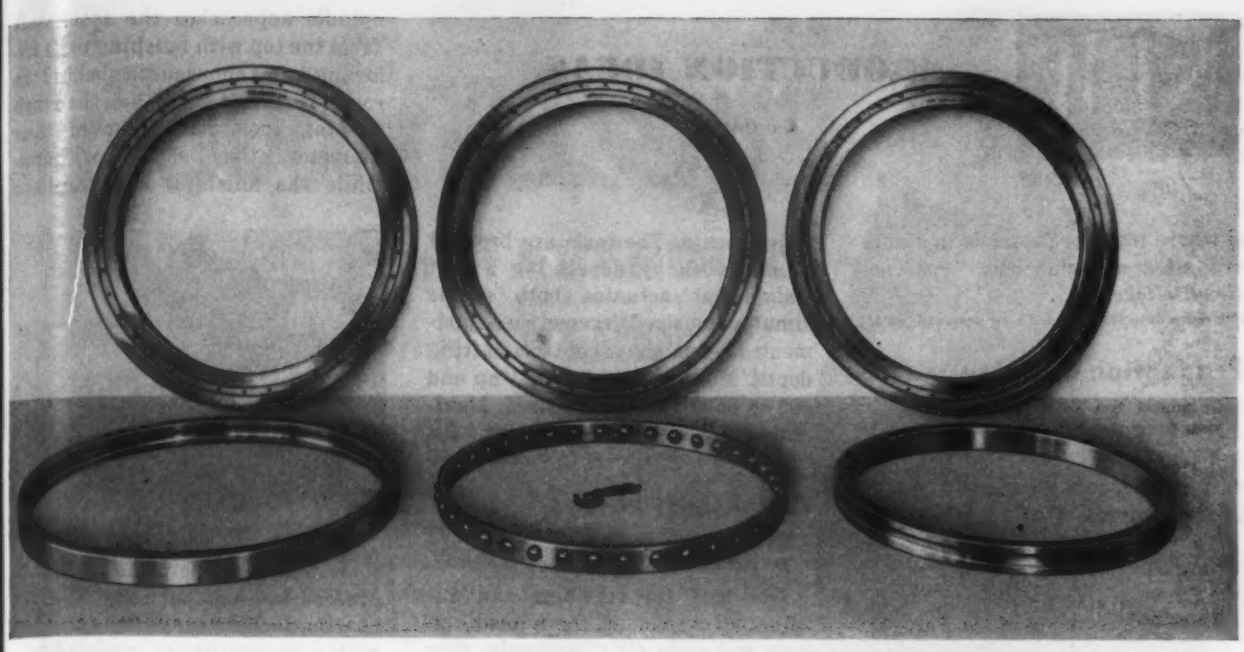
Autocon Mototrols, for better liquid level control, fewer pump operations, lifetime accuracy and low operating and maintenance costs, are described in a new 4-p. folder. These and other advantages are outlined, and a chart demonstrates the sequence of operation, showing how the equipment assures positive predetermined control. *Automatic Control Co.*

For free copy insert No. 9 on postcard.

Disk Grinders

Mattison single spindle disk grinders are fully detailed in a new 12-p. catalog. The circular describes the disk grinding process and when

Turn to Page 94



BIG KAYDON PRECISION BEARINGS PROVIDE PRECISION SUPPORTS FOR NEW "RIM-BALL" INDEX TABLES

A special KAYDON 4-point Ball Bearing, pre-loaded in assembly of the new line of Rehnberg-Jacobson "Rim-Ball" Index Tables, provides support underneath and just inside the outer edge all the way around. Designed to take heavy thrust and radial loads in any direction, this bearing completely prevents any tendency of the table to tip or distort, even slightly.

All six table sizes, ranging from 16″ to 42″, in the new line of R-J "RIM-BALL" Index Tables, are equipped with the type of KAYDON Special Ball Bearings shown above . . . a 35″ outside diameter bearing, for instance, is pre-loaded in assembly on the largest table.

This well-engineered ball bearing rim-support . . . plus locking accomplished by a cam-operated taper pin with a solid, quiet, smooth, accurate action . . . enable these tables to handle efficiently the heaviest cuts of milling or other chatter-producing operations in machining, as well as conventional drilling, reaming, tapping and similar precision work.

KAYDON bearing engineers, backed by sound experience and unusual facilities for designing and producing special bearings in sizes 4″ to 120″ outside diameter, will gladly work, in confidence, with your engineers, to improve performance in the machinery you produce. For dependable bearing counsel, contact KAYDON of Muskegon.

KAYDON Types of Standard or Special Bearings: Spherical Roller • Taper Roller
Ball Radial • Ball Thrust • Roller Radial • Roller Thrust • BI-ANGULAR Roller

THE KAYDON ENGINEERING CORP., MUSKEGON, MICH.

• ALL TYPES OF BALL AND ROLLER BEARINGS 4" BORE TO 120" OUTSIDE DIAMETER •

NEW PRODUCTION IDEAS

Continued

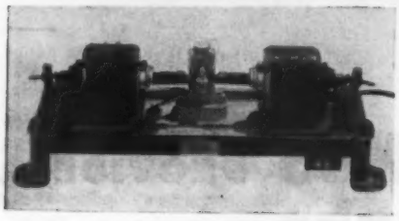
el where tonnage demands in standard sizes are sufficient. *International Nickel Co.*

For more data insert No. 23 on postcard, p. 35.

Production Machine

Designed for fast countersinking chamfering and burring of small parts

The new machine consists of a cast iron base on which are mounted two traversing shaft motors with



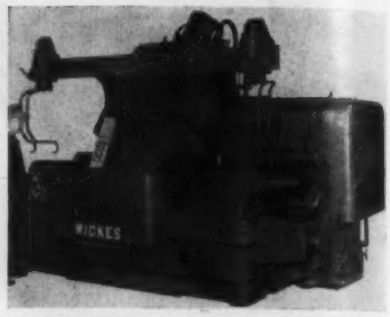
opposed cutting tools mounted in collets at the ends of the shafts, plus a tool post and work holder located at the center of the assembly. The tool post has micrometric adjustments. The tools are brought to the work by depressing a foot pedal that actuates both shafts simultaneously. Micrometric adjustment of each shaft controls cutting depth. Motors from 1/3 to 1 hp and 600 to 3600 rpm can be used. Maximum stroke is 2 in. *Black Drill Co.*

For more data insert No. 24 on postcard, p. 35.

Crankshaft Lathe

New unit ups crankshaft production by over 45 pct.

Designed for roughing and finishing all crankshaft main line bearings and ends simultaneously, this machine incorporates three sets of cross slides which surround the crankshaft with cutting tools. Front and rear cross slides carry the rough turning tools and divide the tool load on the crankshaft during the checking, rough turning and filleting operation. A third massive slide extending from spindle to spindle approaches the crankshaft from the top with finishing tools following a few thousandths behind the rough turning tools. When the rough turning tools have reached their diameter, they slowly withdraw while the finishing tools continue



their spacing operation and then proceed to finish turn and fillet the bearings. This unit is furnished with a hydraulically operated tailstock, live centers, and an electrically operated, push button controlled chuck. *Wickes Bros.*

For more data insert No. 25 on postcard, p. 35.

Gap Grinding Machines

Grinds large diameters on short length stock.

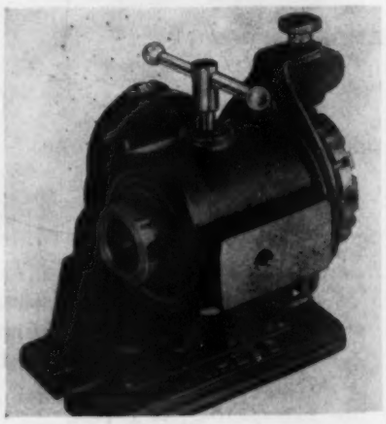
Locomotive piston rods and similar parts requiring additional swing for a large diameter of short length can be ground on new gap table centertype grinding machines. These units have a nominal 16-in. swing, 40 in. over the gap, and are built in four lengths; 96, 120, 144, and 168 in. Grinding wheel spindle runs on Filmatic bearings, a segmental construction that develops high pressure wedge-shaped oil films between the segments and spindle diameter. These bearings automatically adjust themselves to variations in forces created by the grinding action. Spindle bearing diameters are superfinished to a surface accuracy of less than one microinch. Lubrication is automatic, with circulating filtered oil. Table is traversed by means of a rack and pinion and a simple drive from the motor. Traverse rates are infinitely variable between 3 and 120 ipm. Unit is powered by a 20-hp motor which drives grinding wheel spindle through matched V-belts at 2 hp for headstock and 1½ hp for the drive table. *Cincinnati Grinders, Inc.*

For more data insert No. 26 on postcard, p. 35.

Adjustable Work Head

Universally adjustable head provides grinding versatility.

Spiral mills, ends mills, keyway cutters, stagger-tooth cutters, angular cutters, and saw blades can be ground with great flexibility



when using Unihead, a universally adjustable work head. Though designed particularly for use on the swivel table of a Delta toolmaker tool and cutter grinder, the Unihead can be used on other makes of machines, when the Delta Stop-Tooth Unit is used in connection with it. Features of the Unihead include: Heat-treated sleeve with a No. 9 B&S taper mounted in preloaded,

Turn to Page 95

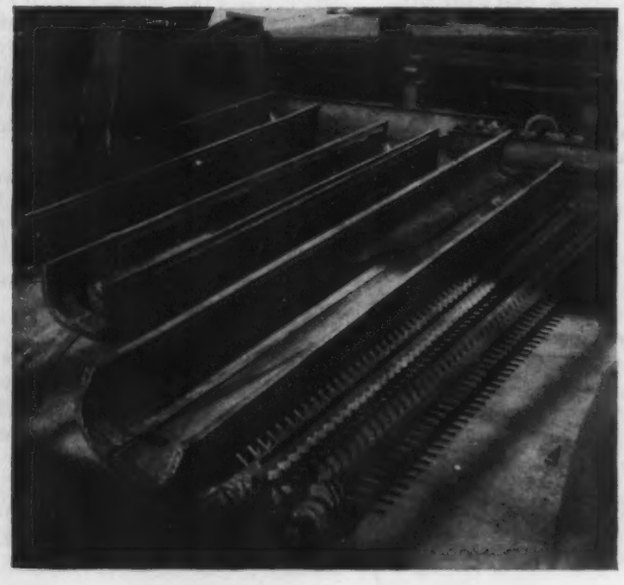
good reasons

to build it of EVERDUR

to weld it with EVERDUR

Fabricating this welded water-jacketed conveyor-mixer was a tricky job . . . and Everdur* is part of the trick. The material shown is Everdur—sheet, rod, tube, pipe and bar—with the exception of the outer jackets. That's because the job called for a tough, high-strength, non-rust material that would dependably resist corrosion and erosion . . . and that could be readily fusion-welded with a rod of similar characteristics.

Joining those hundreds of Everdur fins to Everdur tubes to form the propeller units in perfect alignment was a tricky job of inert-gas-shielded-arc welding with Everdur rod.



Whether it's a matter of production-brazing, or a complicated repair in a fractured casting, you can usually save time and money with ANACONDA Welding Rods. Our technical men know welding "forwards and backwards." Their advice is yours for the asking.

Write now for Publication B-13, "ANACONDA Welding Rods and Procedures."

ANACONDA Welding Rods are available from distributors throughout the United States. The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario. 50191

*Reg. U. S. Pat. Off.

You can depend on ANACONDA® WELDING RODS

Iron Age *Introduces*

WILLIAM J. MILLETT, appointed works manager, Holyoke Works, Worthington Pump & Machinery Corp.

DWIGHT E. MOORHEAD, appointed manager, General Electric's San Jose, Calif., motor divisions.

RICHARD H. FRIZZELL, named sales manager of structural products, Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.

Herbert C. Levis was made used car manager of the HUDSON MOTOR CAR CO. He was previously manager of CHEVROLET'S commercial car and truck department in the Salt Lake City zone.

R. P. Campbell was put in charge, as assistant district manager, of WHEELCO INSTRUMENTS CO.'S new sales office in Grand Rapids. **Don C. Walley** was appointed St. Louis district manager, while **Warren F. Paetz** will take over Mr. Walley's former territory of central Illinois and Iowa. **Samuel M. McDevitt** was transferred to the New York eastern division and **Edward F. O'Brien** will replace him in the Philadelphia district office. **Tom Mitchell** has been transferred to the Boston district office.

James M. Roche has been named general sales manager of CADILLAC MOTOR CAR DIV., succeeding **Don E. Ahrens**, recently promoted to general manager and a GENERAL MOTORS vice-president.

George D. Smittle was named district manager of the Ohio Valley district for BROOKS OIL CO. He was previously associated with FOLLANSBEE STEEL CORP. as superintendent of maintenance.

Nicholas E. Darchi was promoted to the post of wire mill superintendent for VOLCO BRASS & COPPER CO., Kenilworth, N. J. Mr. Darchi has been associated with the Volco organization since 1933.

George Eldred was appointed to the position of abrasive sales manager for MICROMATIC HONE CORP., Detroit. Mr. Eldred, who has been with Micromatic for 13 years, was formerly manager of the eastern sales territory.

John J. Miller has been appointed manager of the industrial division, St. Louis office, of the GENERAL ELECTRIC CO.'S apparatus department mid-states district.

Jonathan A. Bonnell, for the past 4 years on the pricing and sales desk of A. B. MURRAY CO.'S Elizabeth, N. J., warehouse has been assigned to cover Essex County, N. J., sales area.

Dr. John T. Rettaliata has been named vice-president of the AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

Dr. W. J. Monacelli was made acting manager of the patent section, research department, KOPPERS CO., INC.

Angus G. Sturrock was named manager of the metallurgical division with headquarters at Chicago of WYCKOFF STEEL CO. **Edsel Bishop**, formerly of CARNEGIE-ILLINOIS STEEL CORP., was named metallurgist for the Ambridge, Pa., plant succeeding the late **Howard M. Smith**.

Three new district sales representatives named by KOEHRING CO., Milwaukee, are: **R. K. Patterson**, New England sector; **C. Byron Walker**, Pacific northwest and **Al W. Schlosser**, southwest territory.

Frank P. Hanson has joined the engineering department as agricultural engineer, CATERPILLAR TRACTOR CO. He formerly served as assistant merchandise manager.

E. R. Wisner has been appointed manager, locomotive department, BALDWIN LOCOMOTIVE WORKS. Other appointments went to: **E. F. Sheehan**, manager, renewal parts department; **Andrew Liston**, head of sales of foundry products; **M. L. Hall**, manager, testing equipment department; **George F. Walsh**, sales promomotion manager; **J. V. Breen**, manager, order service section and **R. Zerewat**, manager, market research and statistics.

Harrison D. Beale has been appointed manager of the renewal parts division, industrial division, of GENERAL ELECTRIC CO.'S apparatus department.

Moves and promotions recently made by Chevrolet Div. of GENERAL MOTORS CORP. include: **W. B. M. Brownlie** succeeds **M. W. Howe** as manager of the Tarrytown, N. Y., assembly plant; **L. C. Fitzgerald** moves from post of Los Angeles plant manager to succeed Mr. Brownlie at Baltimore; **F. J. Fessenden** from plant superintendent, Baltimore, to succeed Mr. Fitzgerald at Los Angeles; **L. J. Rausch** from supervisor of quality control, assembly plants, Detroit, to succeed Mr. Fessenden at Baltimore; **J. A. O'Kroy** from superintendent of inspection, gear and axle plant, Detroit, to the central office staff.

Philip R. Elmer and **Christopher E. Malone** were elected vice-presidents of the NATIONAL CREDIT OFFICE, INC.

Charles Bangert, Jr., has been named product planning manager; **Yale T. Chaney**, sales engineering manager of the eastern region; and **Robert C. Wilson**, sales engineering manager of the central region for TRUMBULL ELECTRIC MFG. CO., Plainville, Conn.

George J. Madge was elected comptroller of the AMERICAN CAN CO.

Vincent T. Lombardy becomes Newark assistant district manager for U. S. Steel Supply Co., succeeding **William R. Holmes.**

WILLIAM R. HOLMES, becomes Baltimore district manager, U. S. Steel Supply Co.

Iron Age Salutes

L. A. UMANSKY

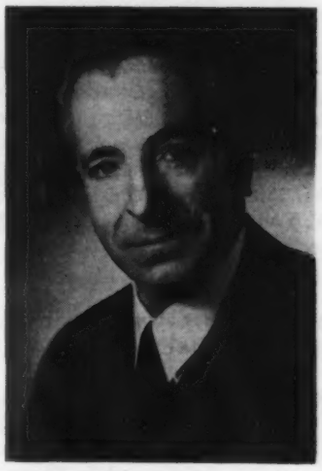
L. A. UMANSKY firmly believes that progress in the steel industry goes hand in hand with its greater electrification. He might be biased in his opinion on this subject, but this is only natural since he has spent around 30 years furthering electrification of industry.

Among the novel electrical applications he has pioneered are adjustable speed rolling mill drives, electric flying shears, strip mill tensiometers, runout table drives, power rectifiers for main roll drives, and others. Many of these are now recognized as steel industry standards.

His activity is well recorded in numerous papers presented before engineering societies—particularly the Assn. of Iron & Steel Engineers and American Institute of Electrical Engineers—and in articles written for the technical press.

Born in 1890 in Russia, and graduated in 1915 from the St. Petersburg Polytechnic Institute, he joined General Electric Co. in 1919 as a student engineer. In 1920 he was transferred to Industrial Engineering Divs., and for the next 20 years devoted his entire time to application engineering in the steel industry. His friends in the industry consider him an authority in this field.

From 1936 to 1940 he was in charge of GE engineering activities in the steel industry. In 1940 he was made assistant manager of Industrial Engineering Divs.—responsible for GE application engineering work in the entire industrial field. He now holds this position.

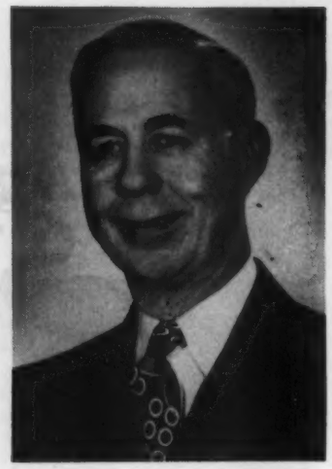


While promoting greater electrification of industry, he has been particularly interested in the use of industrial electronics, amplidyne controls, and in modernization of industrial power distribution systems.

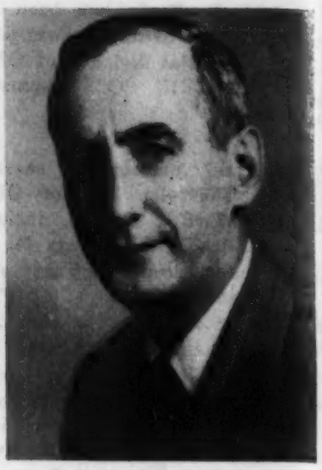
He has also been active during the past few years in the organization of several technical committees of the American Institute of Electrical Engineers, each devoted to the interests of such industries as machine tools, materials handling, rubber and textiles.

Mr. Umansky (or "L. A." as he is known to his friends) has two hobbies. First is the collection of statistics on power use by industry. According to him, this is the best barometer of engineering progress. Second is the training of younger men in application engineering work. He believes this will assure progress for years to come.

LEO J. McPHARLIN, who takes over as director of purchases, Briggs Mfg. Co.



ROBERT H. BAKER becomes assistant director of purchases, Briggs Mfg. Co.



CALVIN F. COOMBS, named assistant general traffic manager, Jones & Laughlin Steel Corp.

H. R. Gibbons was named to the position of chief engineer in full charge of product design, research, application and service engineering for the Hyatt Bearings Div., GENERAL MOTORS CORP. He succeeds **O. W. Young**, who assumes new duties as technical assistant to the office of the general manager.

Paul Codman Cabot was elected a director of the B. F. GOODRICH CO.

Ralph E. Donnelly has been appointed assistant manager of the GENERAL ELECTRIC Fitchburg turbine sales division, while **Thorn L. Mayes** is the new manager of the Lynn motor engineering division. **William E. Herrmann** has been appointed manager of the laboratory production section of the special products division.

Karl L. Rothermund, Jr., was appointed assistant sales manager for the Columbia Cement Div. of PITTSBURGH PLATE GLASS CO. Mr. Rothermund is succeeding the late **C. R. Steenburg.**

H. Dudley Swim was elected chairman of the board of the BAKER-RAULANG CO., Cleveland. **Clarence M. Taylor** was named chairman of the executive committee and **John R. Morrill** becomes vice-president in charge of sales.

Dr. L. P. Seyb, since 1942 a chemist and group leader in the research department of DIAMOND ALKALI CO., has been named manager of research. He succeeds **J. E. Underwood**, who relinquishes the post he has held for the past 6 years to become a research consultant for the company.

William D. Pretts, an application engineer in the crushing, cement and mining machinery section of ALLIS-CHALMERS' basic industries department, has been assigned to the company's Detroit district office as a sales representative.

Ernest G. Jarvis has been elected to the board of directors of the AMERICAN CRUCIBLE CO., North Haven, Conn.

Frank M. Scott, an application engineer in the motor and generator section of ALLIS-CHALMERS' electrical department, has been named a sales representative in the company's Chicago district office.

John B. Patzold was appointed general purchasing agent for the AMERICAN LAUNDRY MACHINERY CO., Cincinnati.

ROBERT G. LEARY, made general sales manager, Rigidized Metals Corp. of Buffalo.

IRVIN H. JONES, named international development manager, Koppers Co., Inc.

R. E. BANSEMER, appointed assistant general sales manager, Koehring Co. of Milwaukee.

3 WILL GET YOU 4

...WITH N-A-X HIGH-TENSILE STEEL

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

It's a fact. It's demonstrated every day, in the production of varied parts and products. *Three tons* of N-A-X HIGH-TENSILE steel are yielding as many finished units as were yielded formerly by *four tons* of carbon sheet steel!

This "new arithmetic in steel" is in step with industry's trend to the use of improved steels. When cold-rolled steel was found to be preferable to hot-rolled for many uses, industry substituted cold-rolled for hot in these uses. Today, it is equally logical and economical to replace simple carbon sheets with low-alloy high-tensile.

N-A-X HIGH-TENSILE makes it possible to reduce sections by 25% ... and *still provide* greater strength and durability than can be obtained with thicker sections of mild-carbon steel! Each ton of N-A-X HIGH-TENSILE steel represents a potential 33% increase in finished goods. Manufacturers are finding that N-A-X HIGH-TENSILE enables them to get 33% greater usefulness out of steel supplies.

Investigate this great opportunity to make each ton of sheet steel go farther ... through the superior quality of N-A-X HIGH-TENSILE.

GREAT LAKES STEEL

Corporation

N-A-X Alloy Division, Ecorse, Detroit 29, Mich.
UNIT OF NATIONAL STEEL CORPORATION

On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Cadillac to build U. S. Tanks in Cleveland . . . Army vehicles program accelerates . . . Auto production as usual seen drawing to a close . . . AMA book gives war production facts

By WALTER G. PATTON

To Build Tanks—The first crack in the automobile production dike came last week when it was announced that Cadillac will build a new 28-ton light tank. Present indications are that the tanks will be assembled in the former Fisher Bomber plant adjacent to Cleveland's Municipal Airport.

While the announcement indicated Cadillac automobile production will not be affected, it is difficult to see how auto output can remain for long at the present peak level. In addition to the present tank program by Cadillac and the Detroit Tank Arsenal, thousands of military trucks have been ordered. Eventually steel now going into regular automobile production will have to be diverted to meet these demands. The only question now is: How long can existing passenger car schedules be continued in the face of military orders coming down from Washington?

Secret Tank Design—Last week Army Ordnance also gave the green light for production tooling for two new tank designs. One of the new tanks is of radical design and a top Government secret.

Washington has also ordered a step-up in the production of M-24 light tanks and M-46 Gen. Patton medium tanks which are now being produced in Detroit at the rate of about 12 per day, according to available information.

Tooling orders for the new heavy tanks are already going out, according to the trade. Present production at the Detroit Arsenal is a single 10-hour shift, 6 days a week. A lack of skilled machinists, toolmakers and welders is about all that stands between the present work schedules and a 2-shift, 6-day operation.

Sedan to Weapons Carrier—Production of military vehicles is increasing at a rapid rate. Last week L. L. Colbert, president of Dodge Div. of Chrysler Corp., announced that Government orders for Army tactical vehicles on the company's books now call for a total of 5241 vehicles costing more than $25 million.

Pilot model cargo trucks have already been delivered to the Army and have passed tests at the Aberdeen Proving Grounds, according to Colbert. The new trucks have improved steering, springing, transmissions and transfer cases. All are ¾ ton 4-wheel drive vehicles. Wheelbase is 112 in. and ground clearance is 16 in.—about twice as much as the average passenger car.

The new vehicles will ford streams with their engines completely submerged. They are especially designed to resist dust, water, corrosion and fungi. Most are equipped with blackout lights and winches.

Pre-Korean Order—Studebaker has also received a military order for 4000 2½ ton military vehicles costing $23,950,000. This order was in process before recent Korean developments and should not be associated necessarily with the crisis in the Far East. The new Studebaker contract includes vehicle service parts as well as an allowance for special tooling required for the job. Actual production of the new vehicles is set for early 1951.

Studebaker Transmissions—A report in the Assembly Line, July 20, page 78, about progress on the new Studebaker automatic transmission neglected to state that the company has already produced nearly 12,000 Studebaker automatic drives. These devices are available for sale through Studebaker dealers. The company hopes to increase its output of automatic drives substantially during the remainder of the year, as indicated in the Assembly Line last week.

Improvement at Rouge—Assuming war conditions do not interfere, Ford has ambitious plans for modernizing its large pressed steel building at the Rouge. The program, which will be completed by 1952, is expected to increase its efficiency as well as improve working conditions.

A considerable amount of new equipment will be installed. Much of the present press equipment and facilities will be rearranged. Substantial changes in conveyors are planned. There will also be improvement in warehouse and storage facilities. The company expects to continue production at the Rouge while the changes are in progress.

$64 Question — The question most frequently asked in Detroit nowadays is, "How soon will military production displace civilian production in auto plants?"

While no one knows the answer, there is some basis for judgment in the industry's experience during World War II. A detailed story of the Automotive Council for War Production has recently been released by the Automobile Manufacturers Assn. The book, "Freedom's Arsenal," was prepared by Christy Borth of the AMA staff. It gives a factual account of developments in the automobile industry from 1940 until the end of the war. Some of the events are described in more detail than was permissible at the time.

Knudsen's Warning—On October 15, 1940, William S. Knudsen first disclosed to the Automobile Manufacturers Assn. his grave concern about the state of the Nation's unpreparedness for war.

Things happened rapidly after that. To review these developments, on October 25, 1940, AMA requested the president of every motor vehicle company to make a survey of the facilities of all auto plants that might be made available for the production of tools, jigs, dies and fixtures and airplane parts. The car producers were asked to subordinate 1941 model changes to the needs of the airplane program.

Production Exhibit — Knudsen also announced a proposal to obtain floor space in Detroit for exhibiting a set of parts for each of the types of planes the Army was planning to build. He further proposed that members of the industry visit two airplane plants where production of approved type aircraft was already under way. Another proposal called for a survey of equipment then in place. Dies and jigs facilities were to be surveyed to determine plant facilities available for construction of wings, ailerons, tail surfaces, rudders, etc.

A steering committee was appointed to investigate the forging situation for aluminum and steel plus machining facilities available for forgings.

This is how it all began just 10 years ago. Many highlights in the war production program are disclosed for the first time in this excellent and detailed account of tooling for and production of war materiel by the automobile industry for the Armed Forces less than 10 years ago.

Hudson Makes Peace—Hudson is the latest auto producer to join the pension parade. Last week a new contract was signed which called for pensions for 20,000 Hudson workers of up to $117.50 monthly at age 65 after 25 years' service. Modified pensions will be paid to workers retiring at 65 with as few as 10 years' service.

The pension agreement runs for 5 years. The contract covering wages and working conditions is for 3 years but can be opened August 1951 and 1952 for wage talks. The union also got a union shop and dues checkoff, vacation pay boosts for workers with 3 to 5 years' seniority and 2¢ hourly increase for 1500 skilled workers. In general the pattern follows the General Motors and Briggs settlements very closely.

Shortly before the union announced the agreement a wildcat strike not connected with the settlement forced a shutdown at Hudson's Jefferson plant.

THE BULL OF THE WOODS — By J. R. Williams

. . . when you use "NATIONAL" Graphite Stool Inserts

● *It is impossible for molten metal to stick to graphite under any conditions.* This means that an ingot cannot possibly stick to a graphite stool insert. If you are bothered with stickers, equip your stools with "National" graphite stool inserts.

Think of the savings!

No lost time in freeing stuck ingots. Keeps maintenance costs down. For complete information on "National" graphite stool inserts, write to National Carbon Division, Union Carbide and Carbon Corporation, Dept. IA.

The terms "National" and "Eveready" are registered trade-marks of

NATIONAL CARBON DIVISION
UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

Foreign Department: New York, U. S. A.

MORE THAN DOUBLE THE USABLE LIGHT!

The biggest news since the invention of flashlights—the brand new leakproof "Eveready" No. 1050 flashlight battery—gives more than double the usable brilliant white light for critical uses than any other flashlight battery we have ever made. NO METAL CAN TO LEAK OR CORRODE.

WEST COAST PROGRESS REPORT

Digest of Far West Industrial Activity—By R. T. REINHARDT

Box Score for Steel—In the present critical international situation steel producers in the seven western states are today in a position to supply approximately four times as much steel as they were on Pearl Harbor Day. Comparison shows that in 1941 ingot capacity in this territory was approximately 1,200,000 tons and today it is more than 4,600,000; pig iron capacity then was approximately 199,000 tons and today is approximately 2,500,000 tons; and production of rolled products in 1941 amounted to about 900,000 and during 1949 totalled approximately 2,400,000.

Principal Factors—Geneva Steel Co., built by the DPC, and the Kaiser steel plant at Fontana built with an RFC loan, have contributed the greatest capacity to western production. Geneva didn't get into production until 1944 and is now operating at its rated capacity of 1,400,000 tons of ingots per year and the Kaiser plant has increased its production from 260,000 tons in 1943 to an estimated 1,200,000 tons for 1950.

Most outstanding increase in capacity in the West has been that of the Kaiser Fontana plant which had a wartime peak production in 1944 of approximately 553,000 tons of ingots and 375,000 tons of rolled products. Rolled products production for 1950 is estimated at 840,000 tons.

Diversification—Equally important to ingot capacity is the diversification which has taken place in the past 9 years. Kaiser steel alone now makes the following products which were not produced in the seven western states prior to 1941: plates, continuous weld pipe, electric weld pipe, cold-rolled strip and sheet, alloy bars, and certain sizes of structural shapes.

Columbia Steel Co. at Pittsburg, Calif., has completed since the war its $35 million cold-rolled sheet and tinplate mill with a capacity of approximately 350,000 tons per year.

More To Come?—Kaiser Steel Corp. has every intention of increasing its facilities at Fontana. The proposal announced in Washington last week that Kaiser-Frazer Corp. was interested in expanding the Ironton blast furnace operation into a fully integrated steel plant would at least be an ace in the hole in the event the military authorities frowned on further expansion of the Fontana plant which is only about 60 miles from the sea coast. However, it is conceded that the 600-ton-per-day Ironton furnace would be a poor base for any kind of steel plant.

Insufficient Production?—Henry J. Kaiser is just as positive today as he was 5 years ago that national steel production is far below even peacetime requirements. The plans reported in Washington before the National Security Resources Board and the Munitions Board which called for expanding the Fontana plant 60 pct to increase steelmaking capacity by 700,000 tons per year at a cost of approximately $100 million, is only one project under consideration.

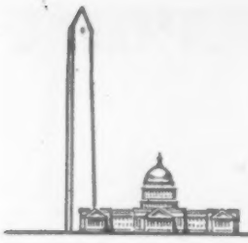
There is reason to believe that were the necessary financing available—either private or governmental but preferably the former—Kaiser interests would be prepared and willing to build a cold sheet reduction and tinplate mill in southern California.

Aluminum Picture—Even the war-born aluminum-producing industry in the Pacific Northwest, which some competent economists believed would be a white elephant at the end of the war, is not adequate to meet even normal requirements let alone military needs.

New or expanded aluminum producing facilities are being considered and actually underway by at least one of three different companies.

Aluminum Expansion—Kaiser Aluminum & Chemical Corp. has been seeking additional pot lime equipment in anticipation of receiving additional power allocations from the BPA.

Harvey Machine Co. of Torrance, Calif., which recently purchased several plant structures and 200 acres of land at the Basic Magnesium Plant near Hoover Dam in Nevada, says that it plans an aluminum reduction plant there. It has also been reported as having taken options on 760 acres of land north of Columbia Falls, Mont., with a similar purpose in mind.



THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

By EUGENE J. HARDY

Only the Beginning—President Truman's request for $10.5 billion additional for military purposes plus various control measures is generally viewed as only the beginning. This interpretation is the only correct one if the United States is to live up to its worldwide commitments. In the breakdown, $6.4 billion was made available for hard goods, such as guns, tanks, planes, etc. The balance of the $10.5 billion will be used for administrative and housekeeping purposes incident to increasing the size of the armed services.

New taxes to pay for this and additional fund requests are certain. They will likely be stiff boosts in the personal and corporate income rates with an excess profits tax an outside possibility.

Political Overtones—The President's message was reasonably well received, but a closer analysis of the legislation to carry out his recommendations revealed the political character of much of what Mr. Truman requested. The direct control provisions—priorities, allocations, and inventory and production limitation—will probably get through without too much trouble.

Initial reaction from Congress to other provisions of the "Defense Production Act of 1950" indicates that closer scrutiny is in order. These include guaranteeing of loans to defense contractors, direct loans for expansion, development or production, government purchases of metals, minerals and other raw materials, premium payments, and authority to establish government corporations with a $2 billion borrowing limit.

Old Stuff—It is little wonder that these provisions caused some eye-brow raising, for they are identical with those advocated by the President in his 1949 State of the Union message when a business recession seemed to be the great problem. They were later embodied in the "Economic Expansion Act" which Congress refused to enact. These provisions were put into the defense bill by the President's left-wing economic claque.

The Commerce Dept., responsible for much of the rest of the bill, would have no part of them. Presidential advisers say that these provisions, coupled with the control measures, will achieve the impossible and provide both "guns and butter." When the President continues to harp on the same measures, war or peace, inflation or deflation, he should expect to be criticized for playing politics.

Voluntary Controls First—Actual controls, voluntary or otherwise, will not be operating for some weeks yet, unless the President invokes the already existing allocations and priorities powers contained in the draft act. The new control legislation will be lodged in the Commerce Dept. at least in the beginning.

Voluntary measures will probably be tried first. While neither the Presidential message nor the legislation makes any mention of voluntary controls, the authority is provided by a section in the bill relating to antitrust exemptions.

Demand Not Great—That voluntary allocations, priorities, and cut-backs in output of civilian goods might do the job at least until defense spending expands even further is indicated by available data on defense needs for steel.

In the fiscal year 1949, with a defense budget of $14.1 billion and voluntary allocations filling steel requirements, military needs were only 2.5 pct of total steel output. In fiscal 1950, the budget increased a little, but defense needs, Marshall Plan aid, and the military aid program, were still taking only 6 pct of total steel output.

The regular budget for all these needs has changed only slightly in the current fiscal year and with only a part of the new $10 billion to be put into hard goods, it can readily be seen that the immediate impact will not be too great percentage-wise. Defense officials realize, however, that in the current tight market any increase in military requirements hurts, but point out that present needs are no cause for panic buying on the part of steel consumers.

More Controls—The future outlook for controls can be summed up in one word — more. While voluntary controls may do the job at the outset, the Administration feels that the natural American desire to get all that one can, will eventually require strict measures, including price control and consumer rationing.

Watchdog Committee—Regardless of which way the mobilization outlook turns, Congress, through a special investigating committee in the Senate, will keep a close eye on the program as it develops.

Combination Quench

REDUCES ALUMINUM WARPAGE

PRIOR to the development of a new combination quenching process, Northrop Aircraft, Inc., had been solution heat treating hardenable aluminum alloys by quenching from the solution temperature into water. When using this method, the sudden cooling of the parts by the direct water quench developed unequal stresses between surface and core which resulted in warpage. Many hours of straightening time were required before the parts could be used in the construction of aircraft components. In many instances the parts were straightened in the as-quenched condition and even then some parts were broken during the process. Spray and fog quenches had been tried on thin sheet stock up to 0.032-in. thickness with some decrease in warpage. But when the quenching action was slowed down enough to prevent excessive warpage the physical properties and corrosion resistance were decreased.

Preliminary tests with thin sheet stock indicated that combination quenching could retard warpage and still develop the necessary physical and corrosion-resistant properties. Later developments proved that either combination spray and water or fog and water quenches were satisfactory for all production parts subject to warpage. The fog and water was found to be slightly the better of the two methods because of the uniform dispersion throughout the first stage of the quenching chamber. Even under a limited production program the decrease in warpage encountered by using the combination fog and water quench decreased the straightening time sufficiently to save Northrop approximately $24,000 per year.

In the fog-water process as developed by Northrop, aluminum alloys of the hardenable types are solution heat treated by heating to the solution temperature, soaking for the usual required time, and quenching though a water-fog, where the materials are held for a few seconds, followed by immersion in water. The maximum time delay in the fog is determined by the density of the fog and the physical and corrosion resistance properties required. For

When solution heat treating aluminum, Northrop Aircraft quenches first in "fog," then in water. Warpage is cut to a point where little or no straightening is required. Physical properties are equal to those developed by plain water quenching.

By GLEN A. ROBINSON
Process Heat Treating Engineer, Northrop Aircraft, Inc., Hawthorne, Calif.

example when a moderately dense fog is used for 75S alloy having a thickness up to and including 0.5 in., the delay is between 12 to 15 sec in the fog, followed by water immersion. Physical and corrosion properties developed are equal to or better than those resulting from the old method of a 5 to 8 sec delay in air followed by a water immersion quench. The moderate dense fog is developed by forcing water at 42 psi and air at 67 psi through 10 nozzles equally spaced around the furnace.

An electrically heated, hot-air circulating, solution heat treating furnace is used for the heat treatment. A cooling tower maintains the quenching water below 100°F during the quenching operations. A controlling panel regulates the quenching rate or time in the fog before entering the water. Instruments record and maintain the solution heat treating process within ±10°F of the desired temperature, and for alloys requiring aging, a similar instrument controls the process with ±5°F.

Comparing Old v. New

Comparison tests were conducted using the old method of quenching from the solution temperature through air into water, and two new combination quenches consisting of quenching through a fog and spray into water, and through fog into water, followed by aging. For 24S material, however, aging was not required.

In order to prevent a variation in physical properties due to changes in material composition, each sheet or extrusion was divided into sections and treated by all three processes. Sheets and extrusions were spaced 5 in. apart in heat treating racks. All sheet samples were 24x36 in. Table I shows the results of a typical comparison test, made on 75S sheet material. Minimum physical properties are given for samples of various thicknesses of this alloy, after solution heat treating. Two samples of each thickness were quenched from the solution temperature by one of three different methods: The old method, a delay in air followed by immersion in water; a delay while being subjected to an air-water fog preceding the water immersion; and a delay in an air-water fog and under a water spray followed by water immersion. One sample of each thickness was delayed for 8 sec in the first stage, the other for 15 sec.

New Method Gives Satisfactory Strength

The minimum physical properties required were, using sheet 0.040 to 0.125 in. thick as an example: Yield strength 62,000 psi; ultimate tensile strength 72,000 psi; and 8 pct elongation in 2 in. The results in the table show that the combination quench produces satisfactory physical properties. When the delay in the first stage was 8 sec, either of the combination quenches produced physicals nearly as good as the straight water quench. When the first-stage delay was 15 sec, physicals obtained with the combination quenches were equal to or better than those developed by the former quenching method.

Similar tests on 75S extrusions gave similar results. With a material thickness of 0.125 in., for example, the straight quench gave a yield strength of 72,500 psi, an ultimate tensile strength of 84,000 psi, and an elongation of 12.5 pct, when the initial delay was 8 sec. With the combination fog and water quench, with 8 sec in the fog, yield strength was 77,700 psi, ultimate tensile strength 88,300 psi, and elongation was 11.5 pct. Though the ductility in this case was slightly lower, for greater thicknesses of the 75S extruded material, ductility, like other physicals, was improved when the combination quench was used. The required elongation in this case was 7 pct.

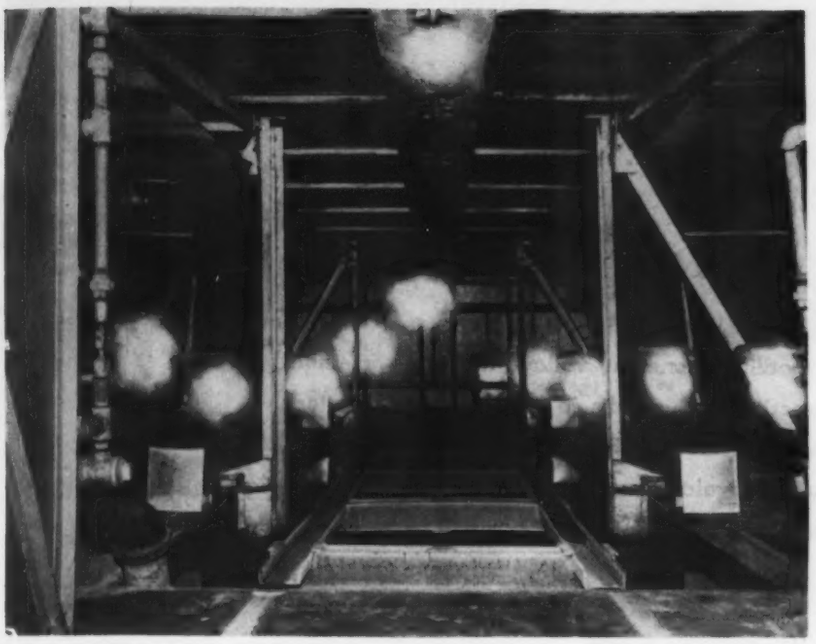
Data were also obtained on 61ST6 and 14ST6 material, and again showed that the combination quench produced physical properties as good or

TABLE I

COMPARISON OF QUENCHING PROCESSES

Quenching Process		Material Thickness,* in.	Minimum Properties Developed					
			Yield Strength, psi: 2 pct offset, First Stage		Ultimate Tensile Strength, psi, First Stage		Elong. in 2 in., pct, First Stage	
First Stage	Second Stage		8 sec	15 sec	8 sec	15 sec	8 sec	15 sec
Air	Water	0.020 to 0.039	64,100	63,500	75,000	74,500	14.5	13.5
Fog and spray	Water	0.020 ro 0.039	63,400	63,000	74,500	74,500	12.5	14.5
Fog	Water	0.020 to 0.039	63,500	63,500	74,300	75,200	12.5	13.0
Air	Water	0.040 to 0.052	65,000	65,200	76,000	76,100	13.5	14.0
Fog and spray	Water	0.040 to 0.052	64,400	64,100	75,400	75,000	12.5	11.5
Fog	Water	0.040 to 0.052	64,500	65,800	75,300	76,800	13.0	13.5
Air	Water	0.052 to 0.125	66,100	64,900	76,000	75,500	14.5	14.0
Fog and spray	Water	0.052 to 0.125	65,000	65,300	74,600	75,000	14.5	14.0
Fog	Water	0.052 to 0.125	65,300	67,000	75,300	76,500	15.0	14.5

* Material: 75S Aluminum Sheet.



FURNACE INTERIOR, showing the location of the nozzles which produce the air-water fog for the first stage of the combination quench.

better than the straight water immersion quench.

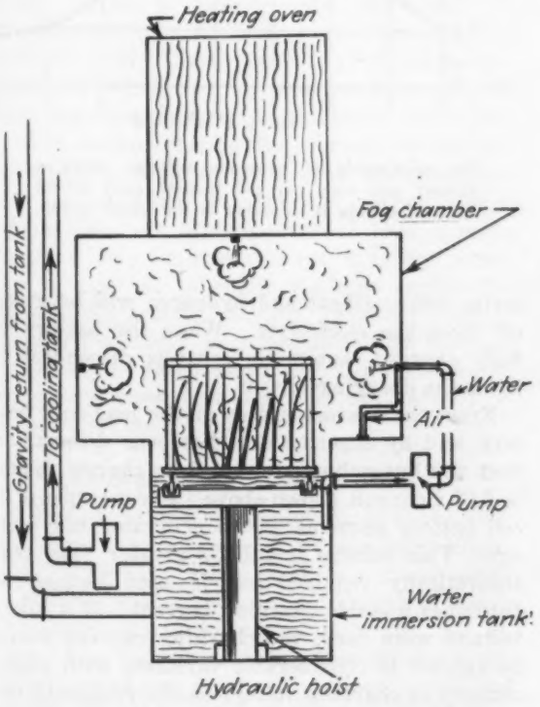
Warpage comparison test results are shown in Table II. All of the samples of 75S and 24S sheet material quenched by the three different processes for physical testing were examined for warpage, and the degree of warpage indicated by numerals from 0 to 6. A zero indicates that there was no warpage, 1 indicates that warpage was so slight that no straightening was required,

TABLE II

RELATIVE WARPAGE

Thickness of Aluminum Sheet, in.	Air-Water, First Stage		Fog, Spray and Water, First Stage		Fog-Water, First Stage	
	8 sec	15 sec	8 sec	15 sec	8 sec	15 sec
0.032	6	5	4	1	3	1
0.051	4	3	2	1	2	1
0.125	2	2	0	0	0	0

"0" signifies no warpage; "2" requires straightening.



SCHEMATIC DIAGRAM of the heating oven, fog chamber, and immersion tank, used in solution heat treating aluminum by the process including a combination quench.

2 indicates that only slight straightening was required, and 3, 4, 5 and 6 indicate increasing amounts of straightening required. As can be seen, with a delay of 15 sec in the first stage, the need for any straightening of the parts tested was eliminated by a combination quenching process.

Comparison tests of corrosion resistance were also made on samples of various thicknesses of different alloys. Out of ten samples treated by the three methods of quenching, six showed no corrosion at all, while on the other four, all 24ST4 of 0.5-in. thickness, there was some corrosion but the corrosion resistance was satisfactory. Tests consisted of accelerated corrosion by the sodium chloride and hydrogen peroxide method.

For the past year Northrop Aircraft, Inc., has been using the fog and water combination quenching process for all sheet and extrusions subject to warpage, and our production line experience and laboratory tests have proved that the process develops excellent properties in hardenable aluminum alloys while at the same time saving many hours in straightening time.

Modified Battery Prolongs

A modified constant voltage charging method, properly used, results in longer storage battery life. Careful charging eliminates battery overheating, avoids loss of battery capacity, and allows daily operation at full power.

THE primary cause of premature storage battery failure is improper charging. It is estimated that industry is currently losing from one-third to one-half its battery capacity due to this factor. Yet, battery charging is simple. In fact, it is almost entirely automatic.

Correct charging requires only that dc current be passed through the battery to restore the energy which has been taken from it while performing work. This current is passed through the battery at a rate that will not overheat the battery but which will completely charge it within a reasonable length of time, generally eight hours. Current is passed through the discharged battery at a high starting rate and tapers off to a low finishing rate as the battery becomes charged.

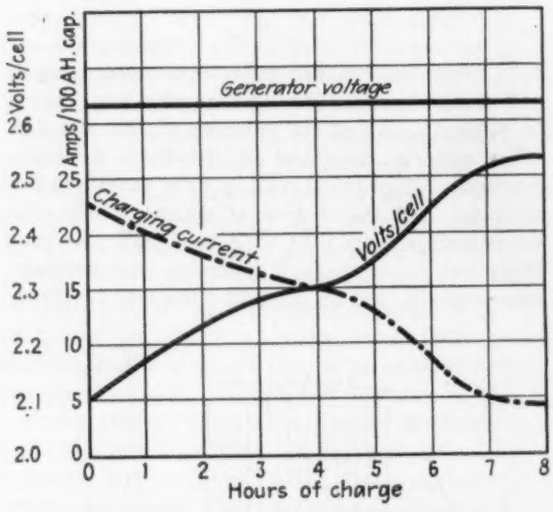
Method Widely Used

One of the most widely used methods of charging industrial-truck and mine-haulage batteries is the modified constant voltage method.

This method generally employs a constant voltage dc generator, although a shunt wound generator can be used when single batteries are to be charged. When the constant voltage generator is used, a ballast register is connected in series with the battery.

At the beginning of the charge, batteries are charged at a high starting rate, the rate depending upon how much the batteries have been discharged. As the battery becomes charged, the charge rate automatically tapers off since the battery voltage rises and approaches that of the generator. Approximately the last 20 pct of charge is given at a low finish rate—5 amp per 100 amp-hr capacity of the battery.

Manufacturers publish recommended finish rates of their batteries. It is important that these rates not be exceeded. If they are, batteries will overheat and hydrogen will be given off from the electrolyte. When the battery is fully charged, automatic controls disconnect it from the charging circuit.



The relationship of generator voltage, charging current, and volts per cell through each of the hours of charge is indicated in the above graph.

From the characteristics of the lead-acid battery, and by experience, it has been determined that the bus voltage for an 8-hr charge should be 2.63 v per cell, shown above. For example, a 15 cell battery requires a 39.5 generator bus voltage. This voltage is a little greater than that theoretically required but is used because it furnishes a stable charging current. If a lower voltage were used, the charging current would be subject to considerable variation with slight changes in charging voltage as the voltage of the battery nears that of the generator.

The ampere capacity of the charging generator is determined by the ampere-hour capacity

Charging Method Battery Life

By K. A. VAUGHAN
Manager, Field Engineering,
Gould Storage Battery Corp.,
Trenton, N. J.

of the battery and the number of batteries to be charged. For each 100 amp-hr of battery capacity, the generator should be able to deliver 22.5 amp. Thus, charging equipment to charge a 500 amp-hr battery should be able to deliver 112.5 amp.

Ampere-Hour Method

One method of controlling the charge employs an ampere-hour meter to measure the product of current and time without regard to voltage. In many installations the meter is mounted on the panel board of the charging equipment, each battery having a separate charging panel. It is set to terminate the charge when the ampere-hours required to bring the battery to full charge have been delivered. To determine the ampere hours required, the specific gravity of a pilot cell is taken before putting the battery on charge, and a chart, supplied by the battery manufacturer, is consulted to give the correct meter setting for that type battery at that specific gravity. Once the meter is set, it is not necessary to reset or take any readings except the final specific gravity reading. Another type of ampere-hour meter is mounted on the body of the battery powered equipment. It registers as the battery discharges and does not have to be set for charging.

Voltage Relay Timer Method

A second method of regulating or controlling the charge is by means of a voltage relay timer. In this method, a relay operates a timer when the battery reaches that state of charge at which the battery starts to gas—2.37 v per cell at 77°F. The battery is approximately 80 to 85 pct charged at this point. The timer, which has been preset, automatically terminates the charge at the end of the time period. The timer setting is generally 2.5 to 5 hr, although it will be

CHARGING INSTALLATION: After the batteries are taken from the trucks, they are rolled to the charging stations on specially designed dollies.

greater for older batteries. When specific gravity readings taken at the end of the charge indicate the battery is not fully charged, the timer setting should be increased ½ hr.

Of primary importance to correct charging is the keeping of records. Each battery should be numbered. When brought in for charging, the date, time, vehicle number, battery number, specific gravity of a pilot cell, and temperature of a pilot cell should be recorded. This same information should be recorded when the battery is taken off charge.

Thus, a complete record of the battery characteristics is furnished which will indicate whether the battery is being correctly charged. For example, if the specific gravity is less than 1.260-1.280 at the termination of the charge, the battery has been undercharged. If the temperature is above 110°F the charging rate has been too high. If the records indicate that the battery is being over or undercharged, the reason can be determined and corrected before work stoppages occur due to battery failure.

Alloys Widen

Alloys of Titanium at strength levels of 150,000 psi and more are finding wide application. Producers are expanding production to meet the ever increasing demand. Aircraft applications are taking big portion of sheet output.

CONSUMPTION of titanium metal has been climbing rapidly. Producers have been hard pressed to cope with the heavy demand for strategic and experimental applications. But ingot capacity is being expanded to supply the fast growing market. Ingot output in June is estimated at three times the May rate. September production is expected to double June's. Outside of several classified fields of use, a lot of titanium is being used in sheet form for aircraft application and as forgings for jet engines.

For the first time titanium metal is being offered to the market in a wide range of fabricated products and in commercial quantities. Titanium Metals Corp. of America, New York, jointly owned by National Lead Co. and Allegheny Ludlum Steel Corp., is selling titanium in a commercial-purity grade in large sheets, strip, plate, bar, forgings and wire. The company also is selling a high-strength titanium alloy, Ti 150A, in the form of plate, bars and forgings. Superior Tube Co., Norristown, Pa., is offering welded and drawn titanium tubing. (THE IRON AGE, April 6, 1950, p. 85.)

There are thorny problems yet to be solved in melting and fabricating titanium in commercial quantities. But many alloys of titanium are being produced now in a limited way. Several are age-hardenable. One offers the prospect of tensile strengths higher than 200,000 psi after heat treatment and cold work.

High-strength titanium-base alloys may be made by adding very small quantities of various alloying elements. Over a thousand ½ lb melts of titanium-base alloys have been made for evaluation of room temperature tensile strength and other properties. The test data shown in Table I represent the best combination of tensile strength and ductility for forged and annealed bars from over 200 small melts of Ti 150A alloy.

The commercially pure grade of titanium offered by Titanium Metals Corp. has a nominal tensile strength of 75,000 psi in the annealed condition. It is identified as Ti 75A. The largest sheet rolled to date is 53 in. wide by 140 in. long. Nominal chemical compositions for Ti 75A and the high strength titanium alloy, Ti 150A, are given in Table II.

TABLE I
REPRESENTATIVE MECHANICAL PROPERTIES

Hardness BHN	Tensile Strength, psi	Yield Strength, 0.1 pct offset psi	Elong., Pct	Pct Red. Area
320	147,500	138,000	25	51
380	173,000	164,000	17	32
450	210,000	.....	10	24

TABLE II
TITANIUM METAL COMPOSITIONS[1]
(percent)

	Ti 75A	Ti 150A
Chromium	....	2.8
Iron	0.10	1.3
Oxygen [2]	low	low
Nitrogen	0.02	0.02
Titanium	99.8	balance

[1] Nominal chemical compositions of titanium metal grades produced by Titanium Metals Corp. of America.
[2] Specific figures for oxygen analysis are not specified as they vary according to method of determination used.

Titanium readily absorbs carbon and all of the chemically active gases at high temperatures. Carbon, nitrogen and oxygen, in other than minute quantities, have a hardening and embrittling effect on titanium that impairs its working properties. It is essential to protect titanium from contact with carbon or either of these gases during melting and casting, and while fabricating at high temperature, as in welding.

Carbon, up to 0.25 pct, strengthens titanium, but there is an appreciable loss of ductility. Too high a carbon content can seriously impair the working properties, with negligible improvement of strength. Some producers of titanium are no longer melting in the graphite crucible. The use

Use of Titanium

By JOHN ANTHONY
Eastern Editor
The Iron Age

of the water-cooled copper crucible avoids carbon pick-up by the melt.

The properties of titanium metal are greatly affected by the purity of the sponge used as melting stock. Material has been obtained which gave a hardness as low as 115 BHN corresponding to approximately 50,000 psi tensile strength and over 40 pct tensile elongation in the fabricated metal. Titanium sponge for the products of Titanium Metals Corp. comes from the Sayreville, N. J., plant of National Lead Co. It is recovered by a leaching process from the sintered ilmenite concentrates that are shipped from the rich MacIntyre Mine of National Lead Co.

IMPACT PROPERTIES

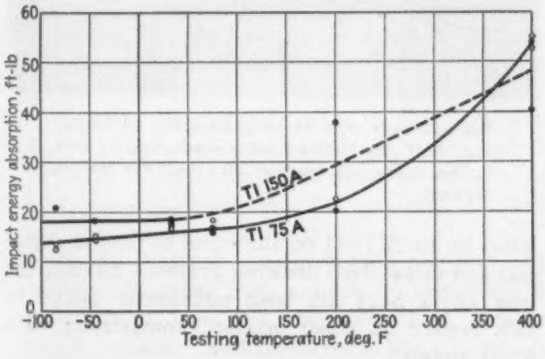


Fig. 1—Impact curves, ft-lb v. temperature for standard V notch Charpy tests. Room temperature properties for T. 150A tested here were T.S., 147,500 psi; elong. in 2 in., 24 pct; reduction of area, 53 pct. Alloy T 75A had the following room temperature properties: T.S. 79,500 psi; Y.S. (0.2 pct offset) 57,000 psi; elong. in 2 in., 28 pct; reduction of area, 51 pct. Specimens of Ti 150A were annealed at 1300°F for 1 hr and air cooled prior to impact testing.

Sponge is melted by Allegheny Ludlum Steel Corp. at its plant at Watervliet, N. Y. Ingots weighing 500 to 600 lb are in regular production. At this plant there is little or no contamination with carbon, oxygen or nitrogen. Flat-rolled titanium products are produced by Allegheny Ludlum at Brackenridge and West Leechburg, Pa. Bars, rods and forgings are produced at the company's plant at Watervliet, N. Y., and wire comes from the Allegheny Ludlum wire mill at Dunkirk, N. Y.

Commercial grade titanium, Ti 75A, does not respond to heat treatment but can be hardened by cold work; or it can be surface hardened by absorption of nitrogen and oxygen at temperatures above 1300°F. Heavy sections can be annealed in the salt bath or in air at this temperature without appreciable loss of ductility. Very light sections must be annealed in a vacuum or in a protective atmosphere. This annealing is usually done under 1-2 microns vacuum. If argon is used the practice is to pass the gas over hot titanium chips which act as a "getter."

Alloys Better Than Cold Work

When high strength is desired with moderately good ductility, alloying of titanium would appear at this time to be more effective than cold work. Ti 150A is responsive to heat treatment, as indicated in Table III showing hardness at several quenching temperatures. The transformation range for Ti 150A lies between 1400°F and 1700°F.

TABLE III
HARDNESSES OF TITANIUM ALLOY Ti 150A
⅝ in. square bar, water quench

Quenching Temperature Degrees F	Vickers Hardness
1200	334
1300	343
1400	380
1500	462
1600	450
1700	473

The hardness of Ti 150A, when cooling from temperatures within or above the transformation

range, depends on the cooling rate. Heavy sections require quenching for maximum hardness. Light sections will harden in air.

The preliminary results of stress rupture tests on Ti 75A and Ti 150A show a very much higher order of properties for the alloyed titanium, Table IV. To date these tests have been only of an exploratory nature.

TABLE IV

STRESS RUPTURE PROPERTIES OF TITANIUM

Preliminary Results

Temperature Degrees F	Stress psi	No. of Hours	Percent Elongation	Reduction of Area
Ti 75A[1]				
800	30,000	broke on loading	39	78
800	10,000	340	17	71
Ti 150A[2]				
500	65,000	4151	....	0.8
700	65,000	2155½	3.0	2.0
800	30,000	2751½	2.7	1.2
800	30,000	2248	2.8	3.1
1000	20,000	13½	47.0	94.0
1000	20,000	13½	42.0	92.0
Ti 150A[3]				
500	65,000	1795	still running	....
800	30,000	1837	still running	....
800	40,000	835	0.5	....
500	80,000	1673	still running	....
700	65,000	1191	27.0	70.0
800	40,000	247½	35.0	80.5
800	50,000	100	40.0	88.9
1000	20,000	8	49.0	94.0
1000	15,000	69	66.0	93.0
1000	10,000	306	still running	....

[1] Room temperature properties: tensile, 75,300 psi; yield, 59,600 psi; elongation in 1 in., 31 pct; reduction of area, 53 pct.
[2] Heat treatment: 1500° F, ½ hr, air cooled. Room temperature properties: tensile, 151,000 psi; yield, 139,000 psi; elongation in 1 in., 18 pct; reduction of area, 48 pct.
[3] Heat treatment: 1300° F, ½ hr, air cooled. Room temperature properties: tensile, 143,900; elongation in 1 in., 24; reduction of area, 53 pct.

Fatigue tests on a rotating beam machine, Table V, show that Ti 150A has an endurance limit of about 80,000 psi, slightly higher than 50 pct of tensile strength.

A limited number of mechanical tests have been made on forged disks of Ti 150A. A 12-in. diam titanium alloy ingot was forged to a 4 in. square bar. A portion of this bar, 7 in. high, was upset to a disk 1 in. thick x 9½ in. in diam. The forging was done on a 2000-lb hammer in two heatings at 1700°F. The disk was annealed for 1 hr at 1300°F after forging. Standard ¼ in. diam tensile test specimens were taken at two ends and the center of a diam of the disk. Two tensiles, from the center section were taken one above the other. These test data are shown in Table VI.

In the pure state the metal will take tremendous cold work without fracture as long as the reduction is done in increments. Compared to magnesium titanium has better room temperature working properties. Olsen cup tests on low carbon-nitrogen-oxygen titanium of sheets 0.062 to

TABLE V

ROTATING BEAM FATIGUE OF TITANIUM ALLOY Ti 150A*

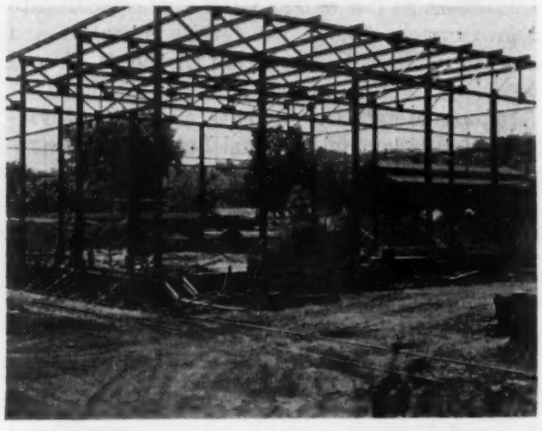
	Fatigue Data			Room Temperature Tensile Properties		
Melt No.	Stress psi	Pct of Tensile	Cycles to Failure	Tensile Strength	Pct Elong.	Pct Red. of Area
X-404A	90,000	64.00	17,800	156,500	22.0	51.0
X-404A	85,000	54.31	20,800	156,500	22.0	51.0
X-404A	82,500	52.71	28,800	156,500	22.0	51.0
X-404A	80,000	51.10	4,924,900	156,500	22.0	51.0
X-407B	81,000	54.00	60,800	150,000	21.0	49.3
X-407B	80,500	53.66	2,048,200	150,000	21.0	49.3

Test pieces were taken from ⅝ in. diam hot-rolled bar annealed at 1300° F 1 hr. air cooled.
* R. R. Moore Fatigue test, specimens polished.

TABLE VI

TESTS ON FORGED DISKS

	Ultimate Strength, psi	Pct Elong., 1 in.	Red. of Area
Edge 1	143,800	20	42.8
Edge 2	143,000	24	48.3
Center 1	141,200	19	41.6
Center 2	143,200	16	30.0



The new melt shop under construction at Watervliet, N. Y., by TMC will be in production by Sept. 1. This is the first tonnage shop built for melting titanium.

0.008 in. thick yield results equal to that of stainless and nickel deep drawing grades. To date the new alloys have not been sufficiently tested in this regard to make precise comparisons with other metals.

Seizing and galling of titanium in drawing and machining have proved troublesome. Titanium has been found to even seize on a diamond drawing die. However, special lubricants are in use today which permit commercial drawing of the metal.

Unlike most metals the elastic modulus of titanium varies with cold work. Pure iron, aluminum, copper and magnesium all show cold creep at low stress levels. Titanium also creeps in a very similar manner. The actual elastic modulus of titanium varies from 13 x 10^6 to over 19 x 10^6 psi and in one case an apparent relation to the elastic ratio was observed.

Plating Range Tests Improve Plating Baths

By J. B. MOHLER
Director of Research
Johnson Bronze Co.
New Castle, Pa.

Plating baths requiring addition agents often cannot be controlled by chemical analysis alone. However, optimum plating conditions under continuous operation can be achieved by periodic plating range tests.

THE control of plating baths has advanced to a stage where continuous bath performance can be guaranteed by operation within chemical limits and use of periodic plating tests. For some plating baths, such as the alkaline tin bath, the bath may be controlled by chemical analysis and adherence to rules or behavior for the anode and the cathode. No addition agent is required in this bath.

Where an addition agent is required, it is quite common that the bath cannot be controlled by chemical analysis for the amount of addition agent present. Addition agents are essential in some baths and of great benefit in others. In an acid tin bath, the deposit is worthless without the use of an addition agent. In a nickel bath and in many of the other baths, operation is possible without the use of addition agents, but if they *are* used, bright, fine-grained, and hard deposits can be obtained.

The principles for control of an addition agent have been built up from experience. Most of the addition agents have been found as the result of trial of a large number of organic compounds. After a successful agent is found, tests indicate the optimum quantity for use and the best frequency of additions. However, it is rarely possible to determine a fixed schedule for additions that will insure continuous operation. It is very difficult to know the exact rate at which the addition agent is being used. The best schedules may result in too much or too little addition agent in the bath. In either case, unacceptable plating may result. These conditions can only be avoided by supplementing chemical control with a plating test.

The principles for control of a plating bath by a plating range test are the same for all baths. It does not matter whether one addition agent or a number are controlled by this method. As a matter of fact, it is possible, although not advisable, to control a bath entirely by a plating range test. The general principles for control by this method consist of establishing a standard for optimum plating range and then determining by small scale tests what has to be done to a bath to bring it back to optimum performance. The small scale tests may consist of electrolysis, purification, chemical treatment or chemical additions. Each test is followed by a plating range test until the desired performance is obtained. Then the proper treatment for the bath will be known and exact steps can be taken.

Glue is a common primary addition agent in

many of the acid plating baths. It is used because it has led to success time after time. It is not an ideal addition agent because there is no simple control method.

It is relatively easy to analyze for the total glue content but the analysis often tells nothing about the performance of the bath. The behavior of glue is quite complex in solution and particularly during passage of current through the solution. The exact beneficial mechanism is not clear but a number of facts about glue and its behavior during electrolysis are known.

Glue is best added to a plating bath by taking it into solution in hot water and then adding the solution to the bath. Usually it is best to stir the glue slowly into boiling water to keep it from forming lumps that are hard to dissolve and to keep it from decomposition at the hot surface of the container. Some grades of glue are easier to take into solution, particularly gelatine which is a refined glue.

Glue does not enter true solution but rather forms a colloidal solution. In concentrated solution it forms a gel with semi-liquid properties. In the dilute solutions used in plating baths, it is merely suspended as particles small enough that they will not settle, yet large enough that they will not enter into true solution.

Glue Is Trapped in Deposit

Although the suspended glue doesn't enter true solution, it nevertheless takes on charges of electricity so that it will be attracted by a charged surface such as an electrode. Part of the glue is charged negatively and part positively. On electrolysis, some of it will pass to the anode and some to the cathode. Also, the glue is not of a single composition, since a great range of molecular sizes exist in solution. Further, the glue is undergoing continuous changes with the water. In general, it tends to break down to smaller molecules and more simple ions so that eventually it becomes soluble as relatively simple amino acids.

On electrolysis, changes take place that do not take place in the absence of electrolytic action. A portion of the glue is attracted to the anode where it polymerizes to larger molecules, becomes insoluble, and collects on the anode as a scum.

During electroplating, a portion of the glue is attracted to the cathode and becomes trapped in the deposit. This glue interferes with crystalline growth of the deposit and causes the formation of small crystals. This is the addition agent effect. If the deposit is analyzed, it will be found that carbon is present to the extent of 0.01 pct or less. This is evidence of the presence of glue in the deposit.

If an insufficient amount of glue is present in a plating bath, the desired addition agent effect will not be obtained. If too much glue is present, the deposit will be adversely affected.

It is known that glue forms a great number of compounds in colloidal solution. Only a portion of these are beneficial. Unfortunately, it is not known what portion of the glue is beneficial nor how to analyze for and control this portion by chemical means.

An alternative to the use of glue is to seek some other addition agent. Where glue is successful in an acid bath as a primary addition agent, the alternative is another colloid that has similar shortcomings.

Test New Formulations

Control of a primary colloidal addition agent depends primarily on experience. There is no good way to predict the requirements of a new formulation for an addition agent. Even after an addition agent is found, there is no assurance of continuous control short of experience with the bath.

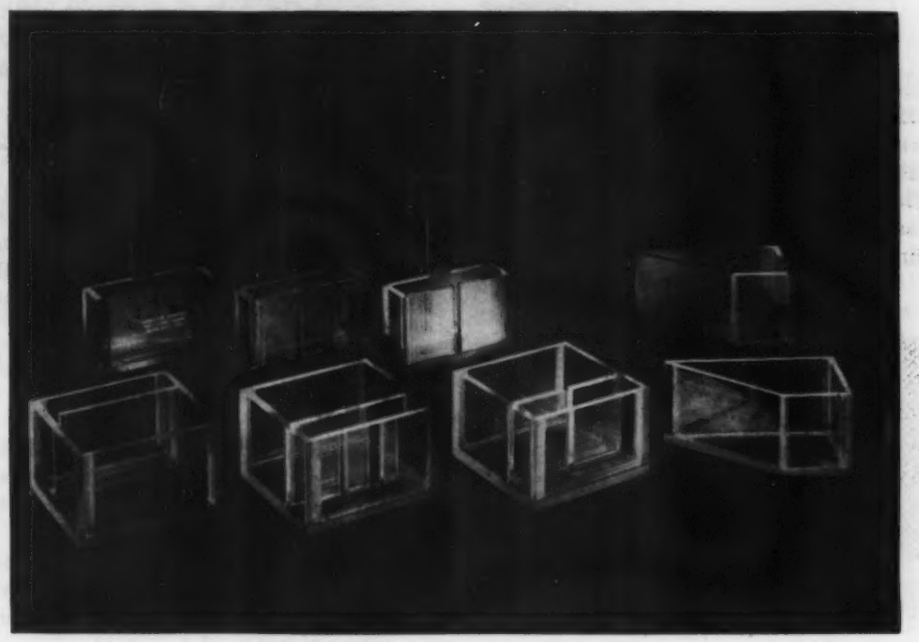
Initial life tests with a new formulation, or with a new addition agent and an old formulation, will determine the proper quantities for routine addition of colloidal substances. If the same quality of glue is used, the original addition to a new bath will always produce the same result. But, the quantity required will vary with the quality of the agent.

Life tests are best made by daily addition and daily electrolysis to simulate continuous use of the bath at the proper current density and at the proper current per cubic foot of bath. Under these conditions some daily quantity will be found that will be insufficient for continuous use. In this case, the plate will eventually become crystalline to indicate this insufficiency. Some other greater quantity will be found that will eventually result in excessive concentration of addition agent and a brittle or rough deposit. In the former case, correction is made merely by addition of more of the agent. In the latter, correction is made by removal of the agent through use of activated carbon and filtration.

Gelatine Used in Acid Baths

Acid lead baths can be operated for long periods of time by addition of 200 mg per liter of gelatine initially, and daily addition of 10 mg per liter. If the baths are not used daily, this rate of addition will not be correct. For instance, a fresh bath can be prepared and used and after several weeks storage it will be found that the gelatine will have to be removed and replaced before further use is possible. Or, if time permits, the bath may be brought back under control by electrolysis.

If a fresh bath is prepared and stored for several months without use, it will be found to be in a useable condition. For intermittent usage



PLATING RANGE TEST CELLS: End slot test cells, left, are for wide plating range. Multiple slot cells, second from left, are for precise testing. Center slot cells, third from left, are for control of SO_4/CrO_3 ratio in chromic acid baths (See THE IRON AGE, Dec. 4, 1947, p. 75). Dip type slot cells are at top, box type slot cells below. Hull type cells, right, are constructed on the principle of an inclined cathode to obtain a wide range of current densities.

of such a bath, predictions are not sound. The best means of control is a plating range test. For the bath in daily use, the plating range test is an aid in that trouble can be avoided by proper small scale testing.

A simple plating range test can be made by plating through a slot.* The slot cell recommended is shown in Fig. 1. This particular cell is constructed with a ¼-in. slot 1 in. from a 4-in. cathode.

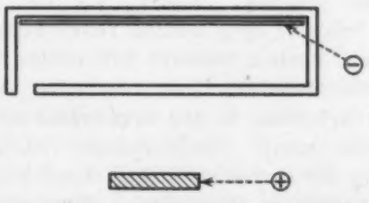


FIG. 1—A simple plating range test can be made by plating through a ¼-in. slot, 1 in. from a 4-in. cathode.

For an acid lead or lead-tin alloy bath formulated with fluoboric acid, and with resorcinol as a secondary addition agent, a normal test plate will appear as shown in Fig. 2. The test panel is plated at an average current density of 20 amp per sq ft.

When the metal content, the free fluoboric acid, the boric acid and the resorcinol are held within prescribed chemical limits, the test panel will always appear very similar to that shown,

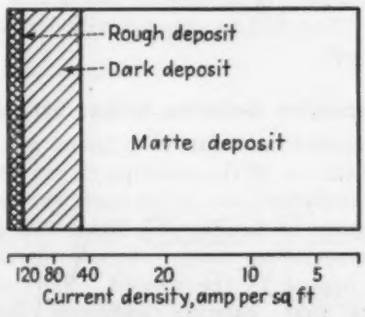


FIG. 2—A normal plating range test panel for a lead deposit, at an average current density of 20 amp per sq ft, will have the appearance shown.

provided the gelatine is functioning properly. It is best to control all other ingredients so that they may be checked and held to limits. Each of these will have an effect on the plating range. If they are held within limits of about ±10 pct the effect will be small. Therefore, if a marked change is noted in the test panel, trouble may be assumed from some other source. Foreign impurities can affect the test panel but loss of control of the gelatine can be the cause of trouble.

If the amount of active gelatine in the bath

is insufficient, the test panel may appear as in Fig. 3. Here the rough deposit is obtained at lower current densities. However, a light deposit is obtained over a wider current density range. The light deposit is also of a better color and less subject to staining than the matte deposit ordinarily obtained with the use of gelatine.

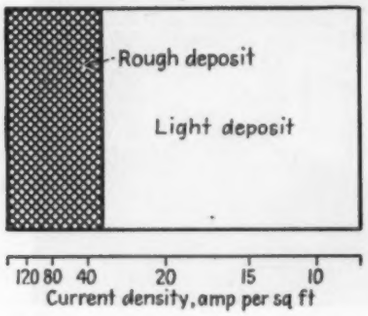


FIG. 3—Insufficient gelatine in a lead bath will result in a rough deposit on the plating range test panel at the lower current densities.

It would appear that a better lead deposit would be obtained without the use of gelatine. As a matter of fact this is the case. However, the bath is characterized by poor throwing power, a crystalline deposit, and a strong tendency to tree. For simple shapes and low current density plating, these dangers may even be allowable. But in most applications they are not tolerable. If a lead-tin deposit is desired, this condition will correspond with loss of tin in the deposit.

Excessive Gelatine Makes Streaks

If excessive amounts of gelatine are present in the bath, or if the gelatine is out of control due to insufficient use of the bath, the test panel may appear as in Fig. 4. Here, the dark deposit appears at lower current density and streaks appear in the deposit. This condition indicates that gelatine additions should be stopped and the bath should be purified of excessive active gelatine. This can be done either by electrolysis or by treatment with activated carbon followed by filtration. In either case a normal gelatine addition may be required after purification.

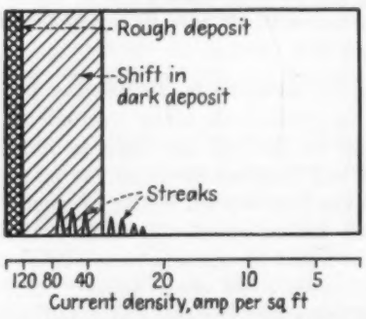


FIG. 4—Excessive gelatine in a lead bath will cause a dark deposit at lower current densities and deposit streaks.

At times, a plating range test will appear as in Fig. 4 and no trouble will be experienced at the bath. This merely means that: (1) The troubles are not evident at the operating current density; (2) the bath is not in optimum condition; and (3) normal additions of gelatine may cause trouble. However, this can easily be predicted by an addition of gelatine to a small portion of the bath followed by a plating range test.

Tests Indicate Deviations

If a plating range test indicates that conditions have drifted from normal, tests with a small portion of the bath followed by further plating range tests will determine corrective steps. The bath may need gelatine addition greater than normal or it may require purification. In either case, the proper steps can be easily and rapidly determined.

If electrolysis is an answer, a 10-min test in a confined area will greatly increase the amp-hr per liter and show the amp-hr required for each volume of solution in the production bath. This test is easily carried out by inserting an anode inside the test cell as in Fig. 5. Such a test is usually carried out at a current density of 5 amp per sq ft. Although low current densities are used for purification, the most effective current density will vary with the bath and with the impurity involved. Electrolysis for a short period followed by a plating range test will determine if such a measure will return the bath to normal operation.

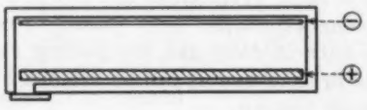


FIG. 5—Electrodes are arranged as shown to determine the effect of electrolytic purification on a plating bath.

The variations in the appearance of a test panel are many. Each change indicates the necessity for corrective steps. Lead baths commonly behave as illustrated. Other acid baths will not respond in the same manner to loss of gelatine control. Acid tin will become rougher with too little or too much gelatine.

The principles of control of a primary addition agent will be the same in any bath where the amount of active addition agent can only be controlled by a plating range test. The essential point to this control procedure is that any deviation from the normal appearance of the test panel under optimum conditions indicates that corrective steps should be taken immediately.

In some baths, low current density plating range tests are of value in that the minimum current density at which plating will start will shift with deviation from optimum plating conditions. The lower limit of the plating range will definitely be extended by the influence of an addition agent.

In many baths, optimum control can be followed more readily by what occurs at low current density than by what occurs at high current density. A shift in the minimum current density to higher current densities corresponds to loss in covering power. Such a plating range test run at an average current density of 1 might appear as in Fig. 6.

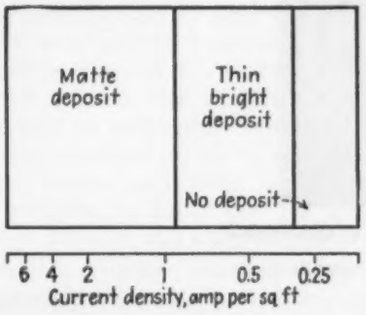


FIG. 6—A low current density, covering power test at an average current density of 1 amp per sq ft appears as shown here.

This test is not common but gives definite indications of bath changes in a plating range lower than the operating range. It also serves as a means of detecting depletion of addition agent or introduction of impurities into the bath before these factors show up as trouble at the production bath. Thus, the test serves as a guide to avoid troubles and make corrections without shutting down the production baths.

Current Densities Not Definite

There are no definite current densities at which it is best to run plating range tests. The test will vary with the bath and with the application. In general, the best current density is the same average current density as that used for the production tank. If troubles are likely to be encountered in a high current density range, an average high current density is advisable. Likewise, lower than average current density tests may be useful. High current density tests would generally be useful where high current density areas, due to sharp corners and edges, are encountered on the work. Some current density tests would be useful where throwing power and covering power are important due to recesses in the work.

The best basis for the plating range test is a good standard determined on a fresh bath freshly filtered and sufficiently electrolyzed to free it of impurities. The other essential requirement is that the test cathode be as clean as possible by chemical means. Whether or not the test cathode is bright or etched by an acid dip is a matter of choice. One advantage of this test is that standards are very easily prepared, and if they are dipped in a thin lacquer they can be permanently stored.

There are only two methods for control of colloidal addition agents. One is experience with the bath. The other is the plating range test.

*THE IRON AGE, *Dec.* 4, 1947; *p.* 75. *Metal Finishing; Sept.* 1948, *p.* 59.

GASOLINE ANTIOXIDANT
Used in Coke Plant

AN aminephenol type of gasoline antioxidant has recently been put to a new and unusual use—that of a gum inhibitor. It is in use at the Kaiser Steel Corp. at Fontana, Calif., in their by-products coke department. Longer operating periods between cleanouts of the carbon disulphide tower have resulted from its use. This tower runs raw second light oil from the coking unit. The longer operating period results from the addition of Du Pont Gasoline Antioxidant No. 5.

Previous to the use of this material, the tower was shut down about every 3 months for a cleanout. This was necessary because of the increased back pressure resulting from a light brown, flaky residue in the trays. In the first operational run with the addition of the Du Pont product, a definite improvement was evidenced. The tower was on stream 13 months before back pressure built up sufficiently to require a cleanout.

According to Kaiser Steel supervisors, approximately 1.5 lb of gasoline antioxidant per 1000 gal of raw secondary light oil is being used to effect the required stabilization. The material is added by gravity feed in the run-down line to the storage tank.

The Kaiser engineers pointed out that while the cost of the antioxidant addition more or less balanced the direct cost of more frequent shut downs, the inconvenience and indirect costs of the interrupted operation more than tipped the balance in favor of the addition of the inhibitor.

Induction Unit

SPEEDS CARBON ANALYSIS

By E. R. MILLEN

and R. M. VREDENBURG

Development Laboratory, Fisher Scientific Co., Pittsburgh

Carbon contents of steel, cast irons and other ferrous alloys in the range of 0.05 to 3.0 pct can be determined rapidly with a high-frequency induction heated instrument. This completely automatic unit operates successfully in both gravimetric and volumetric analyses.

A CARBON determination apparatus, employing induction heating of the sample, was employed as early as 1929.[1] Although tungsten steels and certain nonferrous alloys were analyzed, the carbon content never exceeded 1.0 pct. A special arcing device was necessary. Other instruments have been described for the determination of samples containing less than 0.05 pct C where reduced pressures are required.[2, 3, 4] All of these involve lengthy procedures not suited to repetitive routine analysis. More recently, Aites[5] reported results obtained with a high-frequency induction apparatus.

This paper describes an instrument suitable for the rapid, automatic, routine analysis of ferrous alloys having carbon contents from approximately 0.05 to 3.0 pct. The device uses high frequency to directly heat samples in ceramic boats. The pressure employed is from 3 to 4 in. of Hg above atmospheric.

Induction heating applied successfully to combustion carbon determinations requires adherence to techniques that differ somewhat from the conventional hot-tube method. The basic difference manifests itself in the proper selection of sample particle size and the physical configuration of the sample in the boat. Why such factors are of concern may be best explained by considering the electro-magnetic principles involved.

When a metallic sample is placed in an electromagnetic field, heating effects may arise from one or both of two sources. One source is hysteresis and the other is eddy currents. A third source, heat of reaction, will be covered later. A magnetic material is heated largely by hysteresis. A nonmagnetic material is heated entirely by eddy currents.

In the instrument described, the rise in temperature of magnetic materials to the magnetic transformation point occurs in 2 to 3 sec. The transformation point for low carbon iron is about 750°C. After this, the heating is due to eddy currents only.

The effect of particle size on effective eddy current heating gives rise to the problem of particle size selection. At a given frequency of oscillation, eddy currents may be considered as a multitude of random currents flowing in circular paths within the metallic sample. The diameter of the eddy current path is fixed by the frequency of oscillation. If the diameter of the particle is less than the diameter of the eddy current path,

no current will flow and no heating will result. In such a case, the completed path of the current would necessarily be partially through air where the resistance is practically infinite.

Increasing the frequency reduces the diameter of the eddy current path, but practical limitations exist in the selection of higher frequencies. The size of the induction coil must be made smaller if the frequency is to be increased. The size of the sample boat and the combustion tube itself are consequently limiting factors. The instrument described was designed to accommodate samples of carbon factor weight, 2.727 g.

60-Mesh Particles Are Ideal

It may be seen from these facts that a small isolated particle possibly may not be heated by induction at a specific frequency. However, several small particles in fair electrical contact may effectively present the equivalent of a larger particle and be sufficiently heated. It has been found that a particle which by itself may not be effectively heated may, when in the presence of larger particles, be drawn into the final melt of the larger particles and completely burned.

In practice, with this instrument, steel samples which passed a 20-mesh sieve and are retained on a 100 mesh were found to be ideal. Particle sizes may, however, vary considerably from these limits. Samples normally encountered in routine steel analysis are suitable if caution is exercised to avoid: (a) huge turnings, which are inefficiently heated, (b) huge turnings or large chunks in the presence of extremely small particles where isolation of the small particles might result.

In addition to the reasoning applied above, one must consider the physical configuration of the sample in the electromagnetic field. A finely-divided sample presents a more or less difficult induction heating problem, depending upon how closely together the particles are held by the confining walls of the boat. Thus, even a sample of relatively large particles spread over a large area may not be effectively heated while the same sample placed in a more compact cavity may burn readily.

Briquetting Is Unnecessary

In the case of certain steelmaking alloys, this reasoning leads to a consideration of briquetting which, while theoretically sound, was found to be unnecessary if an accelerator was used. Such is the case when testing National Bureau of Standards sample 61, (ferro-vanadium) or NBS 64 (ferro-chrome), which represent extremely fine particle sizes. Steel samples are not usually of concern in this regard. It is necessary that the sample be as close to the geometric center of the induction coil as possible for most efficient operation.

A third and most important heating effect, that of heat of formation, should also be considered. That the energy involved in the exothermic combustion is greater than that supplied by the induction coil may be seen in view of the following:

Assume a 2.727-g sample of a steel containing 75 pct Fe. According to the reaction $3Fe+2O_2 \rightarrow Fe_3O_4$, there are approximately 3000 cal involved.

Since the maximum power induced in the sample, neglecting the momentary peaks preceding the magnetic transformation point, never exceeds 300 w, there would be transferred energy equivalent to only approximately 300 cal. This assumes the 300 w to be dissipated over the entire 120-sec cycle.

This neglects the exothermic reactions of the combustion of the other possible constituents of the sample that would have to be added to the value determined for the iron alone. The 300 w is a maximum value and is never applied over the entire 120 sec, so that in practice the value of 300 would be lower.

Molten Sample Easily Heated

This was also borne out by visual observation of the combustions. In the absence of oxygen, the sample does not melt although it becomes incandescent. In the presence of oxygen, once the sample has melted, the combustion reaction proceeds with great rapidity. In the molten state, the sample is also ideal for induction heating since coupling losses are considerably reduced.

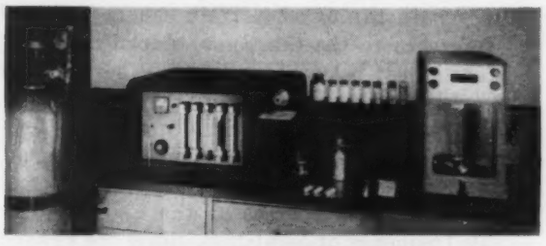


FIG. 1—Absorption tubes and flowmeter are located on the front panel of the high-frequency induction-heated carbon analyzer.

Fig. 1 illustrates the final model of the high-frequency carbon determination unit and its associated equipment. The entire absorption train and flow meter, with the exception of the Nesbit bulb, can be seen mounted on the front panel. They are easily observed and readily replaced by special brass retaining collars. These collars can be sealed against leaking by tightening with the fingers. An indicating knob mounted on the end of the timing motor shaft shows the position at any time during a cycle. By adjustment of this control, the burning cycle can be adjusted for a longer or shorter period. The standard period is 2 min. The combustion tube is made of quartz, 9¾ in. long with an ID of 1 in. This tube is fitted with a brass connector having a threaded brass cover plate. The cover plate incorporates a cobalt blue glass that enables the operator to observe the combustion visually, if desired. The combustion tube can be seen in Fig. 1 in the upper right corner of the instrument. The electrical controls are mounted on

the front panel and can be seen at the left of the vertical absorption tubes. All interconnecting portions of the train are made of copper tubing secured with brass fittings.

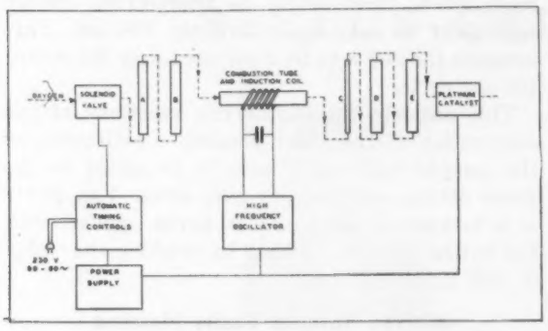


FIG. 2—Simplified schematic diagram of the carbon analyzer shows flow of oxygen through magnesium perchlorate absorption tubes A & D, carocite tube B, flowmeter C, and manganese dioxide tube E.

Referring to Fig. 2, it can be seen that oxygen is introduced through a solenoid-operated valve. This, in turn is controlled by a cam-actuated switch driven by a 2-min-cycle motor. The oxygen path through the train can be followed by reference to the diagram. A platinum coil, heated to just below incandescence, serves as a converter for the oxidation of CO to CO_2.

The boat and sample, initially at room temperature, are heated to incandescence in a matter of a few seconds in the presence of oxygen. It is desirable to operate at the highest practicable frequency of oscillation. Since the desired weight of the sample, the size of the boat, and the size of the combustion tube were determined first, the approximate size limits of the induction coil were established. In order to avoid any adjustment during operation, and at the same time secure good stability of the electronic system with the wide variety of materials to be burned, the operating frequency was established at approximately 10 megacycles. Shielding reduced radio frequency radiation to a negligible amount. The instrument should be operated only with the cover on, since its shielding action reduces radiation.

The circuit diagram appears in Fig. 3. Two GL592 triodes are connected in a conventional push-pull oscillator. The power supply consists of a single-phase, full-wave rectifier employing 866A mercury vapor rectifiers. The type GL592 triodes provide 400-w plate dissipation rating in CCS (continuous duty), and 600-w ICS (intermittent duty) rating. This insures no damage to the equipment if it is operated without a sample in place. The design provides a conservative use of the tubes in normal operation and insures long tube life. One instrument was operated over a 4-year period without oscillator tube replacement.

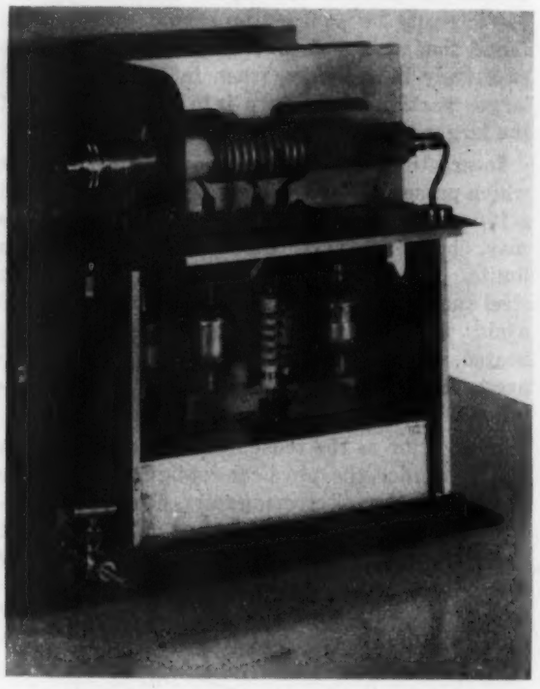


FIG. 4—Side view of carbon analyzer with cover off shows location of coil-heated quartz combustion tube.

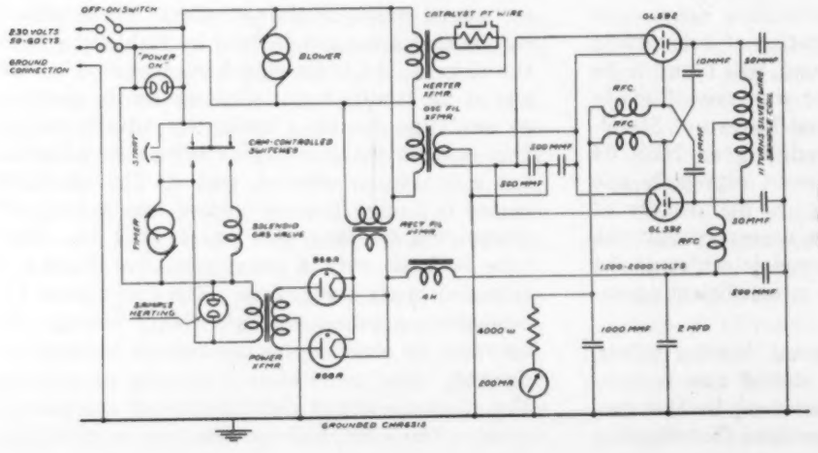


FIG. 3—The circuit diagram of the carbon analyzer appears at left.

In Fig. 4, the arrangement of the quartz combustion tube and the coil may be seen. The combustion tube is readily removed by loosening a brass fitting at the rear and one (not shown) at the front.

In standby condition (no sample being burned), the power consumption is approximately 160 w. It is difficult to state the power consumption during a determination since the power is dependent upon the material being burned. It can be stated, however, that a carbon factor weight sample requires in the neighborhood of 700 w. Actual efficiency, or power consumed by the sample divided by the total power, is likewise difficult to state in general terms. Samples of all types are raised to the temperature at which combustion occurs in 8 to 25 sec. This indicates that efficiency depends upon the physical properties of the material in question. It may be pointed out, however, that most power is consumed only during an actual combustion. Losses by radiation are considerably less than those encountered with a hot-tube furnace.

High Temperatures Reached

Measurement of the temperatures involved was not practical. However, it can be stated with confidence that the temperatures encountered are greatly in excess of 1400°C.

Table I indicates the results obtained on several types of standard samples. Samples of various steels in the form of 3/32-in. diam pins were also analyzed. The results are shown in Table II. The original carbon content is that reported when analyzed in a routine steel laboratory by conventional hot-tube combustion. The pins were cut to afford approximately full factor weights for carbons below 0.4 pct, and less for percentages above this value. Tin was used as an accelerator in each case.

Operation Is Semi-Automatic

Operation is as follows: The instrument is turned on and allowed a 10-min warm-up time. The oxygen flow is adjusted to 300 to 400 cc per min at standard conditions. A weighed sample is placed in a combustion boat inserted in a cylindrical ceramic shield, and placed in the combustion tube. Correct positioning is easily made by a suitably devised probe that automatically places the sample in the most suitable position in the combustion tube. With the combustion tube cover plate in place, and after attaching a tared weighing bulb at the exit end, the "start" button is pressed. The cycle is completely automatic from this point on.

The automatic steps are as follows: The power, after a very short tube warm-up time, is applied to the coil. When the boat and sample have been preheated sufficiently (approximately 20 sec), the oxygen is automatically turned on.

TABLE I

STANDARD SAMPLE ANALYSES

NBS Sample*	Type	Pct C	Pct C Found	Error
101c	Ni-Cr	0.072	0.072	0.000
			0.071	−0.001
			0.065	−0.007
			0.062	−0.010
			0.074	+0.002
129a	High S	0.097	0.100	+0.003
			0.092	−0.005
			0.093	−0.004
			0.095	−0.002
			0.101	+0.004
100a	MN	0.447	0.441	−0.006
			0.453	+0.006
			0.440	−0.007
			0.460	+0.013
			0.450	+0.003
50a	Cr/W/V	0.660	0.655	+0.005
			0.640	−0.020
			0.670	+0.010
			0.662	+0.002
			0.645	−0.015
51a	Electric	1.27	1.25	−0.02
			1.27	0.00
			1.26	−0.01
			1.26	−0.01
			1.28	+0.01
82	Cast Iron	2.78	2.76	−0.02
			2.79	+0.01
			2.78	0.00
			2.75	−0.03
			2.72	−0.06
61	Ferro-Vanadium	1.10	1.09	−0.01
			1.12	+0.02
			1.07	−0.03
			1.10	0.00
			1.08	−0.02
64	Ferro-Chrome	5.10	5.05	−0.05
			5.10	0.00
			5.07	−0.03

* NBS—National Bureau of Standards.

The 2-min cycle continues until the oxygen and power to the coil are automatically shut off and the instrument returned to standby condition.

Colored pilot lights indicate the portion of the cycle when the power is on and when the instrument is in standby condition. An indicating knob on the front panel, attached to the end of the timing motor shaft, indicates the elapsed time during a cycle. It is possible to increase or decrease the burning cycle, should this ever be found desirable, by adjustment of this control.

By using two suitably marked absorption

TABLE II

PIN SAMPLE ANALYSES

Sample	Type	Carbon*	Pin (grams)	Carbon Found
1	18 pct Cr	0.052	2.7074	0.061
			2.8000	0.059
2	18 pct Cr	0.14	2.5385	0.15
			2.6395	0.14
3	"High Melting Alloy"	0.37	2.5200	0.37
			2.6721	0.36
4	Low Cr	0.49	2.0160	0.49
			2.0300	0.49
5	Plain Carbon	0.81	1.9737	0.81
			1.7501	0.83
6	Cr-V	0.98	2.0233	0.92
			1.8700	0.98

* Results reported in a routine steel laboratory.

bulbs, in conjunction with a Gram-atic Balance, it was found possible to continuously run determinations, weighing samples and bulbs on the single balance. A result was turned out each 2½ min.

It was found necessary to use tin as an accelerator when burning samples of cast iron, NBS 82. Samples of NBS 64 (Ferro-Vanadium) and NBS 61 (ferro-chrome) presented a special problem because of their extremely small particle size. It was found that use of strips of magnesium ribbon afforded sufficient acceleration. It was necessary to insure that a portion of the ribbon was placed below the sample as well as on top. Otherwise, the upper surface burned rapidly and the resultant oxide layer prevented further oxidation.

It is interesting to note the sequence of events in burning such samples. A magnesium ribbon alone was not heated sufficiently by induction to cause ignition. The sample would not burn alone. When used together, it appeared that there was sufficient induced heat imparted to the sample to raise the temperature to the point where combustion of the magnesium took place. The resultant heat of oxidation in turn raised the temperature of the sample to the melting point. The resultant partially solid mass was more easily heated by induction and the oxidation of the sample was completed.

Samples of a ferro-chrome containing 0.10 pct C were obtained which passed a 14 and were retained on a 20-mesh sieve. It was possible to burn these samples without the aid of an accelerator. The combustion was extremely violent and the best results were obtained when a half factor weight was used. The combustion was then less violent and results agreeing within ±0.005 pct C were obtained.

The apparatus described was found to be a successful means of obtaining, rapidly and conveniently, the carbon content of a wide range of ferrous alloys and certain steelmaking alloys. The speed obtainable makes the instrument applicable to the industrial routine problem. It is especially desirable if only an occasional carbon analysis is required, since the instrument is at all times ready for use, there being no furnace to be brought up to temperature.

References

[1] C. F. Smith and G. L. Hockenyos, Ind. & Eng. Chem., Anal. Ed., vol. *2*, 1929, p. 36.

[2] W. M. Murray, Jr. and S. E. Q. Ashley, ibid., vol. *16*, 1944, p. 242.

[3] L. A. Wooten and W. G. Guldner, Ind. & Eng. Chem., ibid., vol. *14*, 1942, p. 835.

[4] J. K. Stanley and T. D. Yensen, ibid., vol. *17*, 1945, p. 699.

[5] W. K. Altes, Steel, vol. *125*, 1949, p. 92 and p. 112.

NEW BOOKS

"Let's Sell!" by J. L. Beckley, is a words-and-pictures book telling how to put the sale back in salesmanship. This practical course in effective selling not only passes along to newcomers in selling the lessons learned by the best salesmen of today, but also serves as a refresher course for older salesmen who are in the "salesman's rut." Each point is punctuated with an amusing cartoon by R. R. Baldwin, and each sentence and picture puts across a strong selling point. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y. $2.00. 182 p.

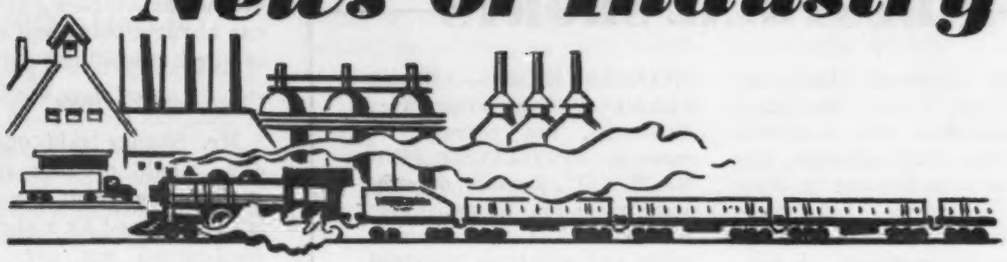
* * *

"Resistance Welding in Mass Production," by A. J. Hipperson and T. Watson. With current emphasis on productivity, it is in the interests of all metal users to be aware of the fields of resistance welding applications and to know how to use them to the best advantage. Special reference is made in this book to design and production requirements, both from the point of view of the design of component parts for optimum results from welding, and the design of jigs and tools for the correst use of the processes under mass production conditions. Obtainable from Publishing Dept., Dorset House, Stamford St., London, S.E.I. 21s net. 278 p.

* * *

"A History of Steel Casting," prepared under the direction of W. H. Worrilow and edited by A. D. Graeff. The book emphasizes the importance of the steel casting industry as a contributor to industrial progress and economic welfare of the nation through the last century. A general history of the steel casting industry is included, along with a primer of production covering original methods and subsequent advances. One chapter is devoted to the historical industrial area in the states bordering the Delaware River. Histories of individual companies are presented, and other sections relate memoirs and reminiscences of early leaders in the industry. Steel Founders' Society of America, 920 Midland Bldg., Cleveland 15. $2.50. 168 p.

News of Industry



Freight Cars Are Older

New York — The Railroads have about 30,000 more cars today than they had when World War II began in 1941. But the cars are older than they were then. More than a third of today's cars are more than 25 years old, while in 1941 less than one-quarter were that old. Average age of cars today is about 20 years.

On the other hand, 300,000 new cars have been placed in service since the war and 400,000 others rebuilt. During the past few months freight car orders have gained steadily.

Those fearful of a car shortage cite the long haul across the continent to supply our forces in the Far East.

Canada Drops Nickel Waste Tariff

Ottawa—Canada has voided until July 31, 1951 all import taxes on refinery waste nickel. This is to expedite nickel recovery of refinery waste accumulating in the United States and United Kingdom by Canadian plants.

Tariffs of 20 pct for American waste and 15 pct for United Kingdom's made it economically disadvantageous for Canada's plants to import waste for recovery.

Fiat Buys Tube Machinery

New York—Fiat, large Italian auto manufacturer, has purchased three Rockrite tube reducing machines in 1½, 2½ and 3½ in. sizes, according to John D. Judge executive vice-president of the Tube Reducing Corp., Wellington, N. J.

Offers Billion Dollar Freight Car Program

Prudential Life Insurance Co. announces plan to build and lease 100,000 cars . . . General American-Evans will help . . . Would require 2.3 million tons of steel.

Washington—A billion dollar program for construction of 100,000 new type, high-speed freight cars has the backing of Prudential Life Insurance Co. of America. Details of the plan were revealed for the first time by Carroll M. Shanks, Prudential president, at a press conference here last week.

Mr. Shanks said his company is prepared to put up $800 million to finance construction of the cars which would be leased to the railroads. Prudential's partner in the project is General American-Evans Co., a subsidiary of General American Transportation Corp., Chicago. General American-Evans is expected to invest about $200 million of its own funds, thus bringing the total to $1 billion—enough to build 100,000 cars.

Straight Lease Plan

The Prudential program was described as "a straight lease plan" in which the railroad has no responsibility for maintenance and taxes. Eight railroads already have entered contracts or are considering leasing of more than 400 cars under the new plan, Mr. Shanks said. He identified the roads as Pennsylvania, Burlington, Nickel Plate, Northwestern, Wabash, Boston & Maine, Southern Pacific, and Gulf, Mobile & Ohio.

Since it takes approximately 23 tons of steel to build each car, a 100,000 car program would require about 2.3 million tons of steel. Such requirements could not be filled in the present market unless the government were to classify them essential to defense, thus establishing priority over non-essential items.

Includes Special Equipment

Like most insurance companies, Prudential owns many railroad securities. "The value of the securities we hold would obviously be enhanced if . . . we could help the railroads increase their profits," Mr. Shanks explained.

The new type box cars, GAEX-DF, are designed to eliminate damage in transit and permit sizable increases in loading and earning power per car. Equipment includes special shock-absorbing apparatus designed by Chrysler Corp. to take up the jolts of starting, stopping and side swaying.

New loading devices developed by Evans Products (10 pct parent of General American-Evans) are said to protect the freight, in-

A somewhat similar plan by Equitable Life Assurance Society of New York was described in THE IRON AGE, Apr. 6, 1950, p. 113. Additional background information on car leasing plans appeared Feb. 9, 1950, p. 101.—Ed.

INDUSTRIAL SHORTS

ISSUES LICENSE — Universal joints built by the Mechanics Universal Joint Div. of BORG-WARNER CORP., Chicago, will soon be manufactured in Australia by Repco, Ltd., Melbourne, under license to Borg-Warner International. A new division of Repco, Repco Mechanics Proprietary, Ltd., will be created and a new plant will be erected or leased in Melbourne.

CHILE ORDERS—Two 31,000-kva turbine generators, costing approximately $700,000, have been ordered from the WESTINGHOUSE ELECTRIC INTERNATIONAL CO., New York, by Chile's power authority, Empresa Nacional de Electricidad, for that country's Los Cipreses hydro project.

LOKUTS — ILLINOIS TOOL WORKS, Chicago, has announced the selection of a new trade name for its line of torque-type self locking nuts. Formerly sold under the trade name Tri-Lok they will now be called Lokuts.

NEW HEADQUARTERS — LEVINSON STEEL CO. has moved to its own building at South 20th and Wharton Sts., Pittsburgh. Sales offices and executive departments will occupy the new building, which is adjacent to the company's fabricating plant and warehouse.

MOVES—The plant of the ACE DRILL CORP., manufacturers of ground-from-solid twist drills, has been moved from Detroit to 2600 E. Maumee St., Adrian, Mich. New equipment and machinery has been installed throughout.

SOUTHERN REP — Graver Water Conditioning Co., New York, manufacturers of equipment for all water treating processes, has appointed EVANS L. SHUFF & ASSOCIATES, Atlanta, as its representative for that territory.

CHANGES NAME — Affiliated Furnace & Engineering, Inc., Pittsburgh, has changed its name to AFFILIATED FURNACE, INC., because of company expansion to nationwide operations. The firm designs, builds and maintains industrial furnaces, specializing in blast furnace construction.

YOURS TO COMMAND — A new film "Yours to Command" showing the iron and steel industry's application of mechanized conveying equipment will be released early in the fall by the CONVEYOR EQUIPMENT MANUFACTURERS ASSN., Washington. The film shows how costs can be cut and sells the mass production principle to the public.

DISTRICT OFFICERS—Harold C. R. Carlson, head of the Carlson Co., New York, has been elected chairman of the AMERICAN SOCIETY OF TESTING MATERIALS, New York District Council, for the coming 2-year period. George O. Hiers was named first vice-chairman; S. R. Doner, second vice-chairman; and A. A. Jones, secretary.

GETS CONTRACT — Blaw-Knox Co., Pittsburgh, has been awarded a contract by MATHIESON HYDROCARBON CHEMICAL CORP., Baltimore, for the engineering and procurement of a large new chlorine and caustic soda plant at Saltville, Va. The plant is expected to go into operation in 1951.

EASTERN MARKET—The acquisition of a plant at 120 Lister Ave., Newark, N. J., has been made by TURCO PRODUCTS, INC., Los Angeles manufacturer of industrial cleaning compounds. The new facilities will serve as a manufacturing and laboratory center for the Atlantic Div. Sidney E. Smith has been appointed general manager in charge of the new factory.

crease the average payload of the car about a third and speed loading and unloading.

Cites Cost Savings

Mr. Shanks said one of these cars "could produce as much as $2000 more profit for a railroad than is earned by a standard railroad-owned box car. Thus, the railroads might earn as much as $260 million annually on the basis of present traffic in additional profits under the program without any capital investment of their own."

GE Earnings at New High in '50

Schenectady—The General Electric Co. sales and earnings for the first half of the year were at record highs, according to C. E. Wilson, president. The company and its consolidated affiliates showed a net profit of $77,445,000 for the 6-month period, a 66 pct increase over the first half of 1949. Second quarter earnings alone were $40,587,000 as compared to $19,850,000 for the corresponding 1949 period.

Second quarter net sales amounted to $462,600,000 and for the 6 months they totaled $881,050,000. These are increases of 19 pct and 10 pct respectively.

ECA Commits $1,200,000 for Mine

Washington—Purchase of $1.2 million worth of materials for modernization of the Norwegian Sydvaranger iron ore mine near the Russian border was included in Marshall Plan commitments this week. Cumulative procurement authorizations to date amount to almost $9.5 billion.

Other commitments included $1 million worth of motor vehicles and parts for Greece and $800,000 worth for Turkey, deliveries to be made this year.

Buys Land for Future Growth

Titusville, Pa.—For the purpose of assuring room for possible future expansion, Universal-Cyclops Corp. has bought approximately 20 acres of land adjacent to its facilities here.

Lab Burner Mishap Leads To Flameproofing Clothing Discovery

Chemist spills mildew liquid on cotton . . . Finds it will not burn.

Pittsburgh—A backfiring laboratory stove gas burner and resultant confusion in which a piece of cotton was saturated with a compound mixed to prevent textile mildew led to the accidental discovery of Permaproof 300. Newly-introduced by Treesdale Laboratories, Inc., Mars, Pa., and B. F. Goodrich, the compound will flameproof work clothing.

Tested at J & L

More than a decade ago a Treesdale chemist was mixing a batch of mildew compound when the burner blew out and backfired. He spilled the compound and the cotton was wetted. The curious chemist later held the cotton over an open flame and was startled. It would not burn.

Advantages Claimed

After years of development, the compound was tested at the Jones & Laughlin Steel Corp. Producers of Permaproof 300 claim these advantages: (1) treated cloth keeps much of its softness and porosity: (2) flameproof qualities are not affected by laundering; (3) cloth is shrink-resistant and will not mildew; (4) while cloth will char when subjected to intense fire, it will not flame or glow after fire has been removed.

Formerly the only flameproofing compound available was soluble and was washed away by laundering or moisture.

Slabbing Mill, 63 Years Old, To Roll for Carnegie-Illinois

Pittsburgh — Carnegie-Illinois Steel Corp.'s decision to reactivate a 63-year-old 32-in. slabbing mill at its Homestead District Works is just another indication of how the steel industry is straining to satisfy strong demand for flat-rolled products.

Revival of the old mill is only temporary, however. After being used to reduce an unspecified stockpile of ingots to slabs for further reduction into plate, sheet and strip, it will revert to standby status. The mill had been idle for 5 months.

The decision also points up the fact that modern high speed hot mills are more than adequate to handle the capacity of other slabbing facilities at the plant.

The mill will be operated one shift per day, permitting the recall of 75 employees who had been laid off.

Rules Needed In Judging Military Orders

Steel in quandary over judging worth of clients' claims . . . Official instructions absent . . . Steel must make difficult choice of depriving other customers—*By John Delaney.*

Pittsburgh — Steel people here are hoping that official Washington gets up off its hands soon and gives the industry some rules to play by. Now they are unwillingly acting as judge and jury in determining the validity of military orders.

They're rarin' to expedite anything vital to the country's defense, but in the absence of official indication of what is essential and what isn't, they find themselves in a dilemma.

Military Order Parade

The pressure from consumers who claim to be producing something important to national security is mounting daily. Some are bona fide, others aren't. Steel producers are asking for proof and in some cases are taking the time to go to Washington to trace the order back to the military department where it originated.

"I'd say she's filled out her form okay, George, wouldn't you?"

But even in cases where an order is established as essential, the steel producer is confronted with still another problem, particularly if the tonnage involved is substantial and calls for a product on which the mill already is booked for months ahead, as is the case in virtually all items today.

That problem is this: Which "non-essential" is going to step aside to make room for the defense order? Has the mill the right to decide who will suffer and who won't? If someone gets hurt can the mill be held legally responsible for failing to live up to its commitments?

Must Deprive Others

For example, a sales executive here received a call from a fabricator who wanted a sizeable tonnage of tubing for the manufacture of "JATO," or jet-assisted take-off tubes to give carrier-based airplanes the extra push necessary to take to the air from a short runway. Pipe and tubing are sold out for the balance of the year. In at least one instance, linepipe is booked for the first half of 1951. If the order is taken, who is going to be short-changed?

Another customer wanted a tonnage for producing steel filing cabinets for use in the Pentagon. Is he entitled to this extra tonnage

on top of his regular allotment, or must he produce the cabinets from the tonnage he has been receiving right along?

These are just a few of the problems now facing steel producers. The situation is not critical yet. But it will get worse. The mills would like to see some action soon to get them out of the soup.

Success Hinges on Needs

The question of whether a voluntary system of allocation will work is another subject creasing the brows of some steel men here. Everybody is anxious to do their part in helping to make it click, but the feeling is that such a program will have its limitations.

If military requirements are such that the tonnage allocated will permit the industry to continue serving civilian needs, there is likely to be no trouble. But if requirements go beyond that, it is felt that 100 pct allocation of steel will be necessary. Because someone is bound to get hurt. And when that happens the pressure for government-imposed allocation will become irresistible.

British Farm Machinery Makers Drum Up Exports at Show

London—Now drumming up export sales at their annual exposition in Oxford, British farm machinery makers are following up good sales results achieved at the recent Toronto International Fair. They express eagerness at capturing a larger slice of the Canadian market.

With production accelerated, total output of the industry in 1950 is expected to reach about $196 million, of which some $78 million will be in exports. In 1949, production totaled $179 million, with $73 million in exports. About half of the '50 rise will result from higher prices.

Exports to Canada this year have been five or six times the 1949 monthly average. Australia still remains Britain's best overseas customer. Some firms cannot enter the export trade because of strong domestic demand.

Steel to Add 6,363,000 Ton Capacity by '52

Will lead to potential of 105,750,000 tons . . . U. S. Steel plans 1,660,000 ton increase singlehanded . . . Steelmaking now tops war peak . . . Should silence critics—*By Ted Metaxas.*

New York—With U. S. Steel in the forefront, 13 of the nation's leading steel mills have embarked on an estimated $1 billion expansion program this year that when completed by the close of 1952 will augment steelmaking capacity by 6,363,000 tons and lead to a production potential of 105,750,000 tons.

U. S. Steel has pledged 1,660,000 tons to this total with a project to improve Pittsburgh and Chicago district plants of its major steelmaking subsidiary, Carnegie-Illinois Steel Corp.

Future capacity growth is insured by U. S. Steel's plan to open 1951 construction of a new integrated steel mill on its Delaware River site, south of Trenton, N. J. Minimum ingot capacity will be approximately 700,000 annual tons.

In announcing the prospective capacity increase, the American Iron and Steel Institute said that steelmaking potential had surged past the 100 million ton mark for the first time in history and on July 1 stood at 100,563,500 tons. Running full blast for one year, American steelmaking furnaces could outstrip combined 1949 world production, with no reservations made for Russia, by about 13.6 million tons.

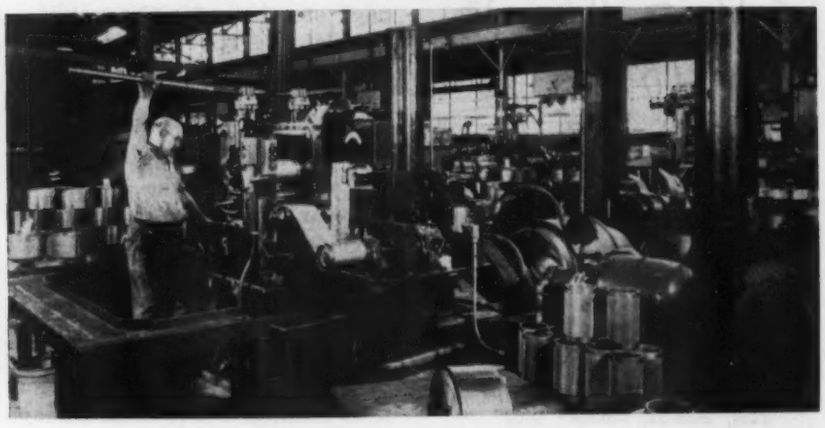
The AISI's report on projected steel capacity increases by the end of 1952 extends a confidential survey conducted by THE IRON AGE (June 8, 1950, p. 91) which revealed that the industry was planning more than a 4 million-ton capacity gain in 1950 and 1951.

Tops War Production

With a capacity increase of 1,170,700 tons made in the first half of '50, the steel industry is now turning out 11 million tons more than it needed to produce in 1944, its most productive World War II year. In the midst of Communist menace from many angles and actual war in Korea, America has stronger steel sinews to turn to war production. Steel people have already indicated their readiness to give first call to military orders.

U. S. Steel's improvement program will contribute 1,215,000 tons to steel capacity within a year without interfering with existent steel production. An additional 445,000 tons of capacity will

ROLLING ALONG: With complete modernization of its Riverside, N. J., strip mill as the eventual goal, The Riverside Metal Co. has installed this 4-high mill that can roll copper alloy strip in widths up to 9 in., down to .003 in. thick at 700 fpm. Another mill, a fully automatic 4-high United Engineering Co. strip mill handling coils of strip weighing 700 lb has also been installed.



be available by the fall of 1951. Plants affected are the Gary and South Works of the Chicago district, and the Homestead, Edgar Thomson, Clairton, Duquesne, and Ohio works (Youngstown) of the Pittsburgh district, which will get two-thirds of the planned capacity.

To throw more steel into a hungry consumer market more quickly, U. S. Steel will enlarge its capacity within the next 14 months by increasing the availability of iron through additional sintering facilities, improving materials handling facilities, rearranging and altering equipment.

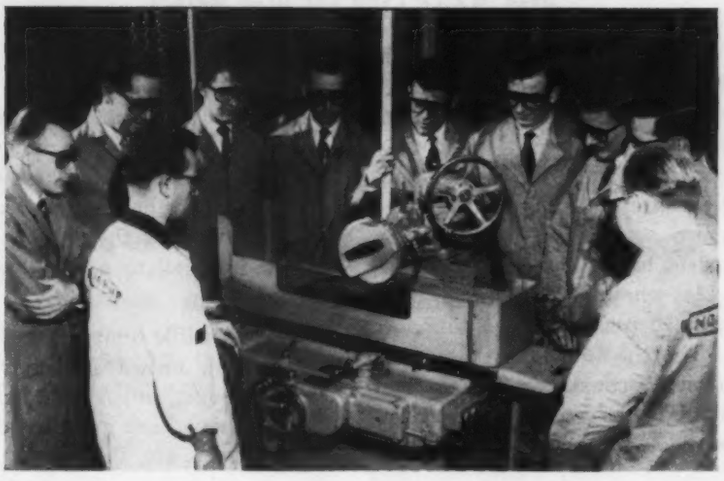
Sintering Plants

U. S. Steel last August announced plans for the building of five new sintering plants to add about 1.8 million net tons of high grade iron ore for its blast furnaces when completed. Sintering processes iron ore fines and iron-bearing blast furnace flue dust into pellets of about 50 pct iron. Production of ten older plants yielded about 3.4 million tons of sinter in 1948.

This huge expansion program should stifle the squawks of government planners that the steel industry is not expanding sufficiently. Scarcely had the echoes of criticism waned when steel stripped it of credibility. Allegheny Ludlum announced a new $23,600,000 plant improvement program in May and U. S. Steel verified its Eastern mill plan.

Expansion Roster

Construction of Jones & Laughlin's new openhearth plant started on May 18. It will give the firm a net gain of 442,500 tons of capacity. In June National Steel disclosed that it would add 500,000 tons to the annual capacity with a $25 to $30 million program. Bethlehem Steel announced plans to invest $32 million in its Johnstown plant and thus increase capacity from 1,900,000 tons to 2,160,000. Republic planned a 150,000-ton boost for its Cleveland area works and Armco expects to raise its production to 4.2 million tons by the end of the year.



Shop Course for Briefcase Men

Worcester, Mass.—Novice white collar grinders take a respite from briefcase and desk work to watch the little abrasive wheel turn in a Norton Co. School of Grinding class that equips salesmen and plant supervisory personnel with working facts of their products.

Training courses at Norton were started 50 years ago and over the decades the burden fell more heavily on production and administrative departments. Officials conceived a plan for a self-sufficient school. Delayed by World War II, plans were activated in 1947 and now the school is established, staffed by six full-time instructors aided by Norton specialists.

Courses consist of practical functions of all types of grinding. More than 150 distributors' salesmen, 100 customers' men, and ten Norton sales trainees pass through the school in a typical year. Wallace T. Montague, vice-president and manager of Business Planning and Development, is school manager.

Purdue Plans Foundry Meeting

Lafayette, Ind.—The third annual Metals Casting Conference, sponsored by the Michiana and Central Indiana chapters of the American Foundrymen's Society and Purdue University, will be held on the Purdue campus, Nov. 2 and 3.

The educational program of the Foundry Educational Foundation will be reviewed. Foundrymen attending the conference will also have an opportunity to see a motion picture showing latest developments in fluid flow. A new feature of the conference will be an educational display.

To Drop Coal Allocations

London—With European imports of U. S. coal reduced from 16 million tons in 1948 to only 118,000 in the first quarter of 1950, formal allocation of coal and coke by the Economic Commission for Europe will be abandoned after the third quarter of this year, it is reported.

For the first time since the war, European supplies of all qualities of solid fuel except graded anthracite seem ample and ECE group countries have practically returned to pre-war self-sufficiency in solid fuels. Their exports are mounting.

Steel Scarce Even For Gray Market

Pittsburgh—The daisy-chain boys are in a good position to make themselves a fast buck these days on any steel they can lay hands on. The indications are that they have become more active since the Korean crisis broke, but it's questionable whether they have been able to pick up much tonnage.

There's no doubt that many a steel consumer today, particularly the small operators who have been living from hand-to-mouth, would be only too happy to pay a premium price. With some form of allocation in the offing, the inventory-starved fabricator hasn't much to look forward to. He's ripe for an approach by the gray marketer.

The odds are against a gray market approaching the proportions of 1948. The big mills have been maintaining very tight control over their outlets. They know where their steel is going and what it is going to be used for. It isn't likely that much, if any, tonnage is getting away from them. Very few consumers are believed to have excess inventory they might be tempted to sell to a gray market operator.

Best possible source for the daisy-chain crowd is believed to be Europe. Imports of semi-finished have been growing and the chances are that some of this is going into gray market channels.

These are the prices that gray marketers are asking—and getting—for what they have available: cold rolled sheets, $180 to $210 per ton; hot rolled sheets, $160 to $200. Some consumers are willing to pay $200 for 16-gage hot rolled; ingots, $75 to $80; sheet bar, $90 to $100.

Continental Foundry Adds Weldment Div. at East Chicago

East Chicago, Ind.—In addition to its steel foundry production and manufacture of rolling mills and heavy machinery, the East Chicago plant of the Continental Foundry & Machine Co. has begun operation of its new weldment division for the production of fabricated steel and composite steel casting and steel plate structures.

Company officials estimate the new plant will increase the yearly sales volume at East Chicago by 30 pct. Enlarged service is offered by permitting production of assemblies by either steel castings, steel plate fabrications or composite assemblies methods.

The new plant, adjacent to the main one, was acquired from the government last April for $900,000. New machinery valued at $250,000 has been installed.

Ingot, Plate and Sheet Exports at Half of '49 Rate

Washington—Reflecting domestic shortages as well as expanding foreign production, exports of steel ingots, plates, sheets, and so on, are now running at about half the average 1949 rate. Exports for both April and May were valued at about $18 million per month by the Census Bureau.

General exports during May rose slightly to about $814 million. About 75 pct of the $13 million increase over the April figure was accounted for by increased shipments abroad of motor vehicles and planes.

By categories, May exports were: trucks and buses, 10,720 units; passenger cars, 8024 units; airplanes, 73; auto parts for assembly, $10.7 million; and auto parts for replacement, $11.4 million.

Westinghouse Equipment Goes Into Belgian Firm's Plate Plant

Pittsburgh—Westinghouse motor and control equipment is being installed at the 132-in. plate mill of S. A. D'Ougree-Marihaye, now under construction at the Belgian firm's Ougree plant, near Liege.

The order was placed with Westinghouse Electric International Co. and its Belgian licensee, Ateliers de Constructions Electriques de Charleroi (ACEC). Two 3500 hp main drive motors, motor generator sets and other apparatus are being supplied by ACEC for Belgian francs.

Erection of the plate mill opens the Belgian company's modernization program. ECA funds are in back of this installation and a later one to add a strip mill and a complete 66-in. hot mill. Wider strip steel will be produced.

Hold Scrap Theft Suspect

Birmingham — Police of Tuscaloosa trying to stamp out a scrap metals theft ring operating in the Birmingham area for the past few months netted a 26-year-old suspect whom they charged with trying to unload about 3 tons of stolen mining car couplings on Tuscaloosa scrap dealers. The man admitted the theft and also robbery of about 14 tons of scrap iron, police claimed.

DuPont Develops "Rulan"

Wilmington, Del. — "Rulan," a flame-retardant plastic serving as electrical insulation, is being offered to wire, cable, and electrical industries by E. I. du Pont de Nemours and Co. It is available in commercial quantities.

May Use Sponge Iron Method

Stockholm — The sponge iron method may be used in exploiting iron ore deposits in Venezuela's Cerro Bolivar, reports the newspaper, *Svenska Dagbladet*. Now in use at the Central Sweden Sodorfors plant, the method was evolved by Prof. Martin Wiberg, of the University College of Technology.

of this city. It was also reported that Dr. Magnus Tigerschiold, member of Sweden's Iron Masters' Assn., recently visited Venezuela at the invitation of the government.

The Swedish Trade and Industries Commission recently freed from all controls trade in tinplate and containers or parts of containers made wholly or partly of tinplate.

To Continue All-Rail Ore Shipping

Pittsburgh — Carnegie-Illinois Steel Corp. will continue all-rail shipments of iron ore into its Pittsburgh-Youngstown district operations as long as good weather prevails and the freight cars are available.

All-rail shipments began July 13 as a move to offset losses due to ice conditions on the Great Lakes that held up movement by water until the first week of May—about a month behind schedule. On an industry-wide basis this represented a loss of about 10 million tons.

Carnegie-Illinois would not estimate how many tons it might ship all-rail before cold weather. Estimates are that all-rail shipments will cost the company about $1.00 more per ton than shipments by rail and water.

Mack Celebrates Anniversary

New York—In announcing Mack Trucks, Inc., golden anniversary as a truck manufacturer, E. D. Bransome, president, said that American highway transportation has grown to a $30 billion annual business. He defined highway transportation as both motor vehicles and highways.

Plans Silica Refractories Plant

Pittsburgh — Harbison-Walker Refractories Co. will build a silica refractories plant at Windham, O., with a starting capacity of 20 million 9-in. brick equivalents annually. The first unit will be in operation within a year. A 45-acre site was recently purchased for the plant.

Kaiser Files Plan to Swell Fontana Output

Blueprint offers government 700,000 ingot ton increase at $100 million cost . . . Unofficial green light given to New England steel mill . . . Aluminum boost proposed.

Washington — Indications are that the government will move quickly in its drive for new and additional steel capacity.

At government request, Kaiser Industries, Inc., last week filed with the National Security Resources Board and Munitions Board a plan by which the capacity of the Fontana Steel plant could be expanded by 700,000 ingot tons. The cost would approximate $100 million, Mr. Kaiser said.

New England Mill

At the same time, an unconfirmed report is that a similar proposal reviving the movement for construction of a steel plant in New England has been laid before the two planning boards.

The crisis in Korea has added new zip to the drive for a steel mill in New England. It is understood that Stuart Symington, chairman of the National Security Resources Board, has given the green light to its backers although no official action has been taken. Meanwhile, the survey on the feasibility of the mill is being accelerated by Coverdale and Colpitts.

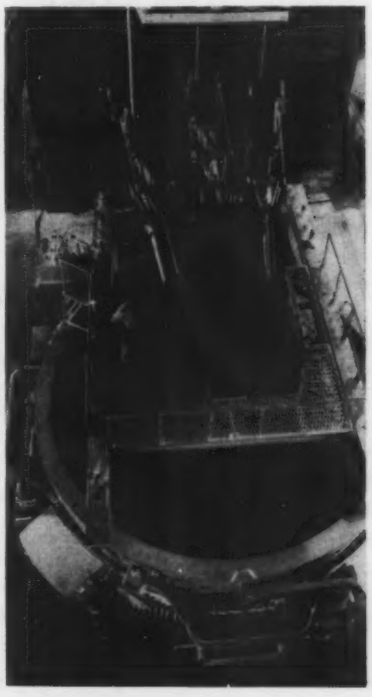
The Kaiser blueprint is a concrete proposal involving an estimated construction cost of $100 million. Presumably such construction would be financed in part by a loan either from RFC or from the Production Loan Fund proposed in Truman's message.

Support from Sheppard

A Kaiser spokesman said that Rep. Harry R. Sheppard, D., of Calif., had pledged help to obtain financing for the project. Mr. Sheppard, speaking before the House last week, endorsed the proposed production loans, steel expansion in general, and the Kaiser proposal in particular.

Mr. Kaiser has also filed with the mobilization planning boards other proposals by which he would increase his production of aluminum by 316 million lb and cement by 7 million bbl. Expansion of the aluminum facilities would cost an estimated $50 million.

ELECTRIC FURNACE: With installation of the three giant 20-in. graphite electrodes, Bethlehem Pacific's new 75 ton electric steelmaking furnace was ready for the current. Reportedly, it is the largest on the West Coast and augments a 50-ton model installed 2 years ago. The furnace's 1½ in. steel plates are lined with a foot of refractory brick. The bottom has brick 2 ft thick.



Steel Barrel Shipments Up

Washington — Total May shipments of steel shipping barrels and drums were 2.9 million units as compared to 2.5 million in April and 2.6 million in May 1949. Shipments of steel packages, kegs, and pails totaled 5.0 million units in May, 0.2 million over April and 0.4 million units more than May 1949.

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

Steel Capacity And Political Failure

THE performance of the steel industry for the first half indicates that it may produce a record total of 100 million tons of steel during 1950. The prospect has already evoked considerable editorial comment. The best of these is probably the lead article in *Barron's* of July 10.

The reappearance of a gray market and the outbreak of war in Korea are bound to encourage the bright boys in the capitol to demand added steel capacity to be built by Uncle Sam and the subjection of present output to government control. The plea will be that our steel supply is inadequate and that private industry has failed.

This indictment is distinctly out of order. As *Barron's* points out "such an analysis will show—that all talk of an American 'steel shortage' misses the significant point. The significant point about the American steel industry is not its weakness but its immense strength.

"At the present time Russia is turning out less than 25 million tons per year and her satellites less than 10 million. Against this must be placed not only America's production but a British output of 17 million tons (also achieved by private enterprise) and an additional 28 million tons for Western Europe. All told, the West commands nearly 150 million tons of steel per year as against a maximum of 35 million tons for the Iron Curtain countries."

All this leads to some interesting reflections. The average American has been dismayed by the failure of American and allied forces to halt the upstart Communists from North Korea. The latter have been completely unimpressed by western military performance during the last war or the enormous potential of power which this country and its friends now possess. Wars are won on battlefields and not by unrealized and unconverted potentials or by enormous productive capacity—on the home front.

The preparation for war and the maintenance of an adequate state of defense constitute beyond doubt the first function of the state. Our Louis Beans and Leon Keyserlings have been so preoccupied with revolutionizing the economy that the American government of which they are representative members has failed dismally in the performance of its primary task.

In this connection an article by Hanson Baldwin, the noted military expert, in the *Saturday Evening Post* adds further evidence of the failure of political as contrasted with industrial leadership. It is clear from the Korean dispatches that our political leaders have not provided effective arms in adequate quantities in spite of the most efficient basic industries in the world. Baldwin points out that we do not have the best military equipment; that the Russians, for example, have better tanks and probably better artillery than we have, that the Japs at the beginning of the last war had the best fighting plan, that the Germans led the way in guided missiles, that the Germans and Japs had the most powerful and toughest battleships.

We won the war, Baldwin says, because we were able to overwhelm our foe with the sheer mass of materiel. Large scale efficient output is the result of private enterprise. If we are in difficulties today, it is not because the steel industry has failed to boost its output but rather because our political leaders once more were asleep, because they left diplomacy in the hands of incredibly stupid public servants. It is political leadership that has failed. The early clamor for controls by our planners, we suspect, rests largely on the need for scapegoats.

U. S. Knowledge Aids British

Washington—Both output and efficiency are rising in the British steel foundry industry as a result of techniques recommended by a 16-man group brought here last year under the Marshall Plan technical assistance program, the ECA reports. Five weeks were spent in visiting plants in a dozen American cities.

Among major recommendations which are being placed in effect are revision and altering plant lay-outs, replacement of manual procedures with labor-saving machinery, and turning more attention to mechanical materials handling, the ECA said.

Hold Refractory Castables Study

Washington — An extensive study on the properties of refractory castables, heat resistant concretes made of a refractory aggregate bonded together with a high-alumina hydraulic cement, is being conducted by R. A. Heindl and Z. A. Post, of the National Bureau of Standards. Typical installations range from combustion chambers of home furnaces to heat-treating furnaces of steel plants.

Workers Paid $4467 for Ideas

St. Joseph, Mich. — Whirlpool Corp. workers have received $4467 for their ideas since a suggestion system was started earlier this year. Ideas are received at an annual rate of 1255 per 1000 employees, well above the national average of 195 per 1000, according to Charles Haube, manager of employee relations. Almost 10 pct of the ideas are used.

Plan Great Kanawha Bridge

Washington—Construction of a 1435-ft highway bridge across the Great Kanawha river near Charleston, W. Va., is scheduled to start in 1951. A $48,000 government loan has been extended to the city of Dunbar for planning purposes. The cost of the bridge is estimated at $1,619,000.

Alcoa Allocates; Reynolds Rescinds Boost

Alcoa starts allocating pigs and ingots . . . "Scare buying" prompts move . . . Reynolds boosts prices; listens to Truman and rescinds increases.

New York—The adoption of an allocation system, raising of prices, and rescinding of the increase late last week dominated all news in the aluminum industry.

Early last week Reynolds Metals Co. announced increases of 1¢ to 2¢ per lb on several of its products, citing increased production costs as the reason. After hearing President Truman's speech, R. S. Reynolds, Jr., president of Reynolds Metals, sent a telegram to the White House informing President Truman that the long contemplated price increase was being rescinded.

Telegram to Truman

July 20, 1950
Phoenix, Ariz.

To President Truman
The White House
Washington, D. C.

In the light of your message to the Congress yesterday and your radio address last evening, we are immediately rescinding price increases announced by our Louisville office yesterday, which have been contemplated for some time. Our company pledges you its wholehearted support in your program.

R. S. Reynolds, Jr.
President, Reynolds Metals

Alcoa Disclaims Shortage

Meanwhile, Aluminum Co. of America began allocating pig and ingot aluminum to halt a wave of "scare buying" induced by international developments. Alcoa explained that there is no severe shortage of pig and ingot aluminum, and that its allocation was prompted by growing evidence that some consumers were "stocking up" in apparent fear that their source of supply might suddenly be shut off or curtailed.

Under the program adopted, pig and ingot aluminum will be allocated to old-time customers on the basis of historical requirements. Orders from consumers who formerly bought from secondary smelters will not be accepted.

Alcoa's action does not extend to its fabricated products, into which goes a majority of the pig and ingot aluminum it produces. The allocation system now in effect is similar to the one in force from mid-1948 to early 1949.

Zinc Plant to Go Up in Italy

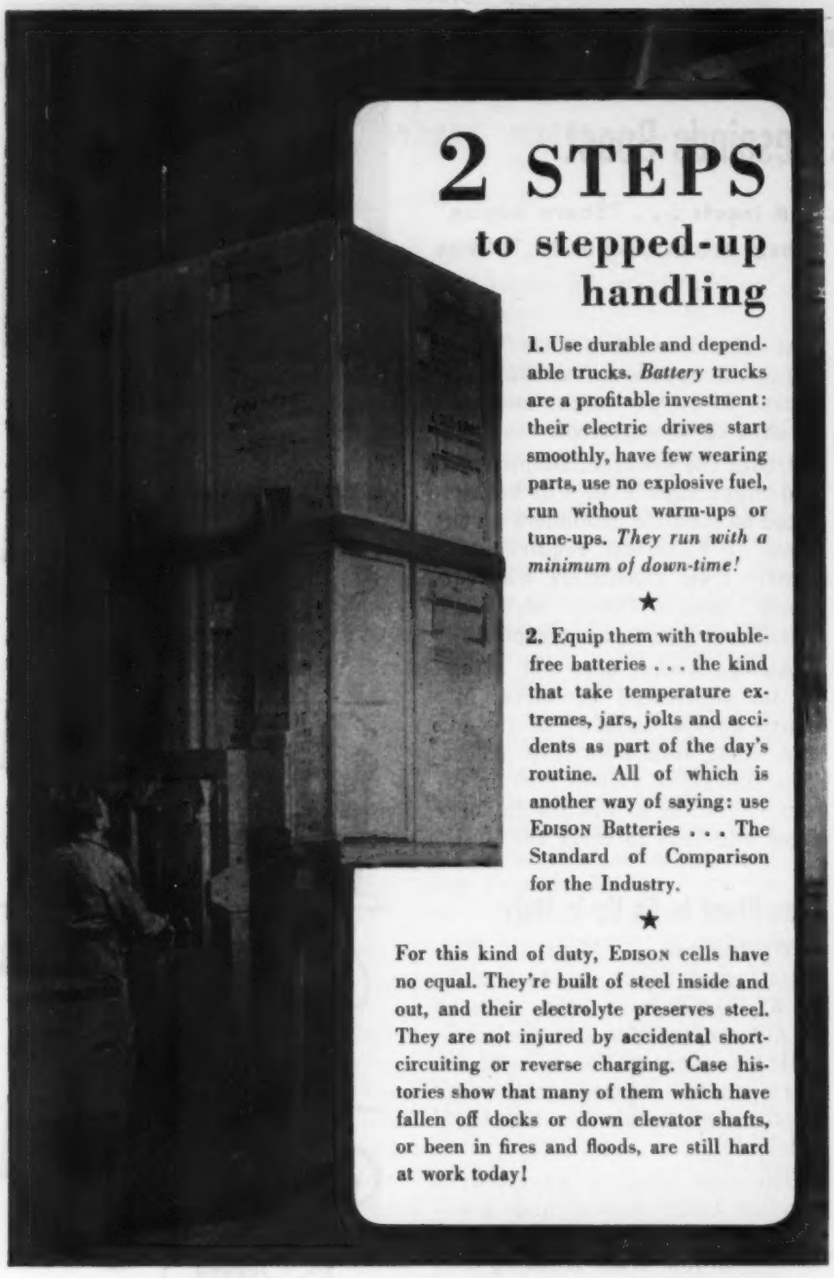
Washington — Marshall Plan counterpart funds in the amount of $1,494,000 have been released to aid construction of an electrolytic zinc plant at Nossa, Italy. Repayments will be made in 11 years in form of metals for the U. S. stockpile.

The new plant is expected to produce 10,000 tons of high grade zinc and 10,000 tons of sulphuric acid from low grade oxidized ores from the SAPEZ mines in northern Italy. Half of the production will be exported.

Central Has Foreign Visitors

Chicago—Central Steel & Wire Co., Chicago steel and nonferrous warehousing concern, was visited recently by branch managers of the Armco International Corp. from all parts of the world. Managers from London, Paris, South Africa, India, Australia, Cuba and South American countries viewed the company's operations in detail and later attended a question and answer session supervised by company officials.

The original dead-burned dolomite refractory
BAKER'S
MAGDOLITE
always
5 WAYS BETTER
COMPOSITION
PREPARATION
STRENGTH
ECONOMY
QUALITY
JEBCO PRODUCTS
Plants: Billmeyer, Pennsylvania; Millersville, Ohio
Makers of Baker's Magdolite
THE J. E. BAKER COMPANY
YORK, PENNSYLVANIA



2 STEPS
to stepped-up handling

1. Use durable and dependable trucks. *Battery* trucks are a profitable investment: their electric drives start smoothly, have few wearing parts, use no explosive fuel, run without warm-ups or tune-ups. *They run with a minimum of down-time!*

★

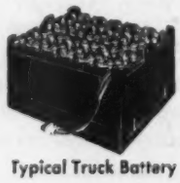
2. Equip them with trouble-free batteries . . . the kind that take temperature extremes, jars, jolts and accidents as part of the day's routine. All of which is another way of saying: use EDISON Batteries . . . The Standard of Comparison for the Industry.

★

For this kind of duty, EDISON cells have no equal. They're built of steel inside and out, and their electrolyte preserves steel. They are not injured by accidental short-circuiting or reverse charging. Case histories show that many of them which have fallen off docks or down elevator shafts, or been in fires and floods, are still hard at work today!

For full information, write today for free booklet SB 2039 and a current price quotation. You'll find EDISONS cost little more than other makes of batteries . . . and they pay this back over and over in terms of low upkeep and long, long life. *Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey. In Canada, International Equipment Company, Ltd., Montreal and Toronto.*

EDISON
Nickel · Iron · Alkaline
STORAGE BATTERIES


Typical Truck Battery

Steel Gains Top Production In History with 1950 Operations

New York—Steelmaking records fell this year when the industry attained its largest 6 months' production in history, its greatest quarterly production, and its highest June output, reports the American Iron and Steel Institute.

Setting the new peaks, production in the first half was 47,106,000 tons, in the second quarter, 24,895,000 tons, and in June, almost 8,131,000 tons. Steelmaking topped 8 million tons in every month of the record quarter and weekly production averaged more than 1,913,500 tons. Result was 1,200,000 more tons of steel than in the first half of 1949.

Second quarter output was also 800,000 tons greater than first quarter 1949 production, the former record. It was 2,700,000 tons more than first quarter 1950. June steel output was 1,626,000 tons over '49 output.

To achieve these results, operation during the second quarter averaged 100 pct of capacity or better.

Form Ferroxcube Corp. of America

New York—Formation of the Ferroxcube Corp. of America, with headquarters at 50 E. 41st St., this city, is jointly announced by the Sprague Electric Co., North Adams, Mass., and the Philips Industries, Inc., Hartford, Conn. Factory site is at Saugerties, N. Y.

The firm will make Ferroxcube, a new ferro-magnetic ferrite useful as a core material in high frequency coils and transformers. It is expected that production quantities will be made available about Sept. 1.

Acme Reports Profit Gain

Chicago—Predicting a record year in earnings for 1950, Carl J. Sharp, president of the Acme Steel Co., reported substantial gains in earnings for the first half of 1950. Net earnings for the first 6 months totaled $3,296,179 as compared with $2,398,528 in '49.

wherever you are...

ALEMITE OFFERS LOCAL SERVICE & SUPPLY

Over 1700 Alemite Service and Supply Centers Assure You Quick, Efficient Service—On the Spot!

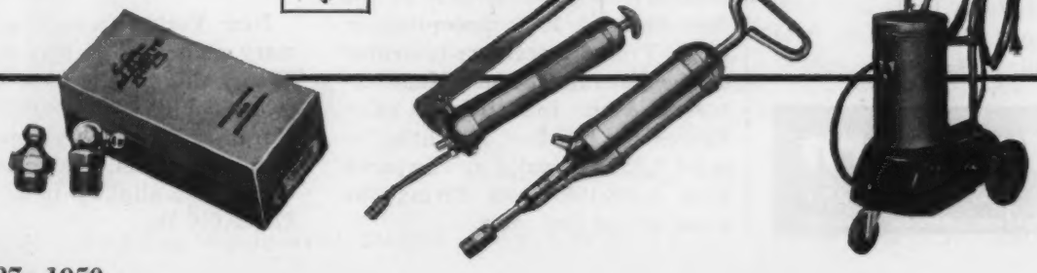
That's why Alemite customers from coast to coast save time, trouble and money—*daily!* They depend and call upon this vast, national network of experienced lubrication specialists. And so can you!

Every Alemite Service Center is staffed by qualified personnel, ready to offer experienced counsel and rapid aid on any lubrication problem you face. Fast, on-the-spot service is a *habit*, not an occasion, with these local Alemite branches, distributors and service jobbers. They are equally "at home" with maintenance, repair or supply problems. And they know what "hurry" means!

Write today for the name and address of your nearest Alemite representative. Address your proposal to Alemite, Dept. N-70. 1850 Diversey Parkway, Chicago 14, Illinois.

STEWART WARNER

ALEMITE



At Fred Heinzelman & Sons
NEW YORK, N.Y.

Pangborn Hydro-Finish CUTS HAND POLISHING OF DIES 60%

reports Mr. J. L. Crosby, General Manager

Shown here is the Pangborn Hydro-Finish unit which set new records at Fred Heinzelman & Sons. A pioneer of heat treated dies, the company reports: Hydro-Finish removes heat treat oxide discoloration, cuts hand polishing 60% to 70%, holds tolerances to a precision .0001"!

Find out how HYDRO-FINISH *can save you money*

Hydro-Finish is the answer to modern cleaning, decorating and finishing problems. As Fred Heinzelman & Sons have found, Hydro-Finish virtually eliminates tedious and expensive hand buffing and polishing on tool and die maintenance. Now, dies with heavy oxide discolorations can be cleaned faster and at lower cost.

And, on the production line, Hydro-Finish assures better bonding, electroplating, painting—gives you *the surface you want* within .0001" with no pits, grooves or hard-to-clean imperfections left after cleaning.

For full information on the many ways Hydro-Finish can save you money, write today for Bulletin 1400 to: PANGBORN CORPORATION, 1201 Pangborn Blvd., Hagerstown, Md.

Pangborn
BLAST CLEANS CHEAPER
with the right equipment for every job

Stronger Now Than in '41

Boston—New England industry could quickly and easily be converted to defense production and could probably surpass its World War II production rate, according to findings of the New England Council.

The Council reports that this area is industrially stronger in most respects than it was when we entered the last war. One example is the output of New England power companies. At present, power capacity is 3,280,000 kw while in January 1941 it was only 2,350,000 kw. By the end of 1952 it is expected that New England power output will reach 3,833,000 kw.

Seek Byproduct Methods

Washington — Methods of producing benzene, phenol, and other chemicals as byproducts of synthetic liquid fuels made from coal and oil shale are to be studied by the Bureau of Mines. Benzene, used in making synthetic rubber, plastics, nylon, and detergents, and phenol are both in short supply and the need for these chemicals is expected to increase.

Tin, Copper Imports Climb

Washington—Climbing tin and copper imports accounted for about 20 pct of total May increases which increased to $654 million from $572 million in April, disclosed the Census Bureau. May tin imports were 11,879 short tons, an increase of 8397 over April. Copper imports rose from 32,000 tons in April to 56,000 tons in May.

Vacuum Cleaner Sales Rise

Chicago — Factory sales of household vacuum cleaners increased 15.8 pct over 1949 in the first half of 1950, according to C. G. Frantz, secretary-treasurer of the Vacuum Cleaner Manufacturers' Assn. Industrywide sales figures for the first 6 months totaled 1,695,178 units as compared with 1,463,100 units during the same period last year.

New Locomotives Total 1127

Washington—More new locomotives were installed by American railroads during the first half of 1950 than during any similar period since 1923, according to the Assn. of American Railroads.

The totals for the 6 months were 12,795 new freight cars, and 1127 locomotives, of which 1122 were diesel.

Willys Exhausts Seniority Lists

Toledo, Ohio — Plant seniority lists have been completely exhausted at the Willys-Overland plant here and employment is now being conducted on the open market, reports W. E. Paris, vice-president in charge of manufacturing. Second shifts are being organized in some motor parts departments to meet the production pace for Kaiser-Frazer and Willys-Overland engines.

Increases Tubing Size Range

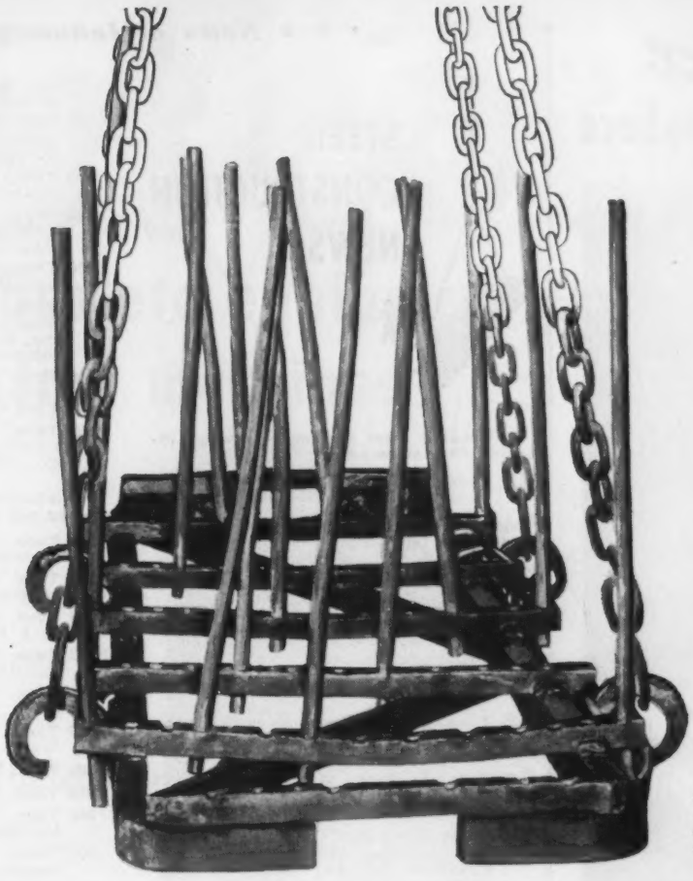
Beaver Falls, Pa.—Size range of its seamless steel tubing has been increased announces the Babcock & Wilcox Tube Co. It reports that it can now produce seamless hot finished tubing in outside diameters up to 9⅝ in. and seamless cold drawn tubing in outside diameters up to 8⅞ in.

Ford, Ltd., Breaks Record

London — A 6 months production record of 100,890 vehicles was set by the Ford Motor Co., Ltd. In June alone, 18,765 commercial vehicles and tractors were made. Total 1949 production was 151,793. Ford, Ltd., recently embarked on a $33,600,000 re-equipment program.

Aluminum Tops Postwar High

New York—Production of primary aluminum in May was 123,858,511 lb, topping the previous postwar high of 117,493,525 lb in March, 1950. May shipments of aluminum sheet, plate, and strip were down slightly to a total of 87,339,640 lb.



Pickling crate made by Youngstown Welding and Engineering Co., Youngstown, Ohio.

"19 years old...but this 'Monel' Pickling Crate is still in service!"

You're sure of extra life when pickling equipment is made of Monel*.

Take the Monel pickling crate shown above. New in 1929, it was put to work pickling steel in the Empire Steel Co., Mansfield, Ohio. *Today, this crate is still on the job!*

Yes, you get *longer* life from Monel. It resists corrosion by hot pickling acids and fumes. It is stronger and tougher than structural steel. And easy-to-make welds retain their full strength and corrosion resistance.

Fabricators will produce Monel pickling equipment to your design out of *economical*, standard mill forms.

Specify Monel whenever you need pickling crates. You'll have smaller, lighter crates that will carry bigger payloads . . . *longer.*

*Reg. U. S. Pat. Off.

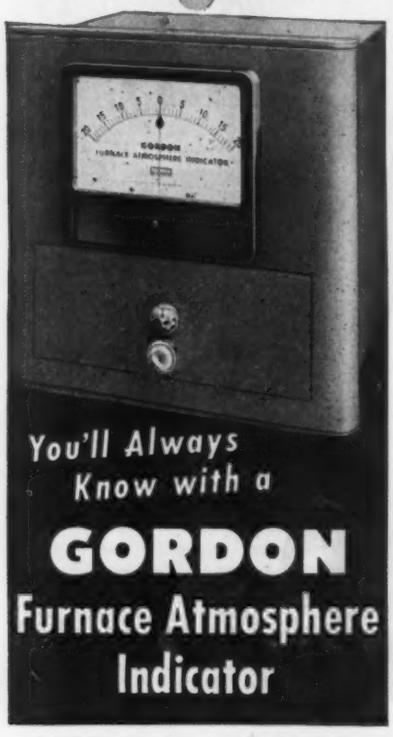
EMBLEM OF SERVICE INCO

"PICK" MONEL FOR *all types of pickling equipment: crates . . . baskets . . . tie-rods . . . nuts . . . washers . . . chain . . . hooks . . . sheet scrubbers . . . wire pickling hooks. For more information on Monel and Monel fabricators, write to our Ray Reddell.*

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York 5, N. Y.

"MONEL*" Pickling Equipment means *Extra* CAPACITY . . . *Extra* LIFE . . . *Extra* SAFETY

Correct Furnace Atmosphere



You'll Always Know with a

GORDON Furnace Atmosphere Indicator

Do you depend upon badly scaled or decarburized work to tell you that something has happened to your furnace atmosphere? And then spoil more work getting the atmosphere back to where it belongs?

A Gordon Furnace Atmosphere Indicator will watch that for you. It makes a continuous, thorough check of the furnace atmosphere, and as soon as it changes, the change is detected and indicated so that quick necessary adjustment can be made. It works on gas or oil-fired furnaces and in protective atmospheres on electric furnaces.

The Gordon Furnace Atmosphere Indicator works on the principle of the relative thermal conductivity of gases. It is so simple and easy to use that top results can be obtained with shop or non-technical personnel.

Where a continuous record of atmosphere readings is required, the indicator can be co-ordinated with a recorder.

You can't afford to be without this instrument any longer.

Price, complete with U-tube and Sample Filter, 110 V, 60 C, **$335.00**

Write for descriptive bulletin for full information.

GORDON SERVICE

CLAUD S. GORDON CO.

Specialists for 36 years in the Heat-Treating and Temperature Control Field

Dept. 16 3000 South Wallace St., Chicago 16, Ill.
Dept. 16 2035 Hamilton Ave., Cleveland 14, Ohio

STEEL CONSTRUCTION NEWS

Fabricated steel awards this week included the following:

340 **Tons,** Mt. Vernon, N. Y., apt. house, to Grand Iron Works, Inc.

Reinforcing bar awards this week included the following:

645 **Tons,** Allegheny County, Pa., Pennsylvania Turnpike Section 30F, to Electric Welding Co., Pittsburgh.

460 **Tons,** Chicago, Mt. Sinai Hospital, to Jos. T. Ryerson and Son, Chicago.

440 **Tons,** Summit County, Ohio, Akron Expressway, to Pollak Steel Co., Cincinnati.

435 **Tons,** Chicago, auxiliary outlet sewer No. 2, to U. S. Steel Supply Co., Chicago.

415 **Tons,** Madison, Wis., alterations to general hospital and nurses home, to Jos. T. Ryerson and Son, Chicago.

380 **Tons,** Milwaukee, building, Hummal and Downing Div. Canell Wood Products Co., to Bethlehem Steel Corp.

370 **Tons,** Plainfield, Ind., Public Service Co. of northern Indiana, to Jos. T. Ryerson and Son, Chicago.

350 **Tons,** Ft. Wayne, International Harvester Motor truck building, to Jos. T. Ryerson and Son, Chicago.

295 **Tons,** Chicago, Calumet sewer 13-A, to Jos. T. Ryerson and Son, Chicago.

280 **Tons,** Altoona, Pa., sewage treatment plant, to U. S. Steel Supply Co., Chicago.

220 **Tons,** St. Paul, Charles Miller Hospital, to Bethlehem Steel Corp.

132 **Tons,** Birmingham, Sloss - Sheffield Steel and Iron Company, office building, to Truscon Steel Company, Birmingham.

110 **Tons,** Chicago, midwest inter-library center, to Concrete Steel Co., New York City.

100 **Tons,** Chicago, apartment building, Catalpa St., to Ceco T Steel Products Co., Chicago.

Reinforcing bar inquiries this week included the following:

1500 **Tons,** Cleveland, southerly sewage disposal plant.

565 **Tons,** Allegheny County, Pa., U. S. 22 and 30, paving LR 765.

370 **Tons,** Lawrence County, Pa., section 29-A Pennsylvania Turnpike.

365 **Tons,** Chicago, Moody Bible Institute building.

355 **Tons,** Racine, Wis., St. Luke's Hospital.

355 **Tons,** Madison, Wis., Memorial Library, University of Wisconsin.

325 **Tons,** Dayton, Salem Ave. Bridge.

255 **Tons,** Voltaire, N. D., power plant.

240 **Tons,** Chicago, American Brass Co. building.

105 **Tons,** Milwaukee, National Guard hanger, Gen. Mitchell Field.

100 **Tons,** Cleveland, Ford Motor Co. engine plant superstructure.

Building at New Peak

Washington — Preliminary figures by the Bureau of Labor Statistics indicate that a new high of 687,000 dwelling units were started during the first half of 1950.

June construction also set a new monthly peak figure of 142,000 units, the BLS said. Both the June and the half-year figures were more than 50 pct above comparable 1949 periods.

The increase was entirely in the private building field. Construction of public housing was running a third behind 1949 figures with only 3000 units started during the first quarter.

Building Stays High in June

New York — June construction awards totaled only 1 pct less than the all-time record of April, according to the F. W. Dodge Corp. The June figure for the 37 states east of the Rockies was $1,345,463,000 and for the first half the total came to $6,854,148,000.

To Build Research Lab

New York—Contract to build a one-story, brick and steel research laboratory at Dobbs Ferry, N. Y., for the Stauffer Chemical Co. has been awarded to the H. K. Ferguson Co., industrial engineers and builders. Construction is underway.

First Unit of Building Finished

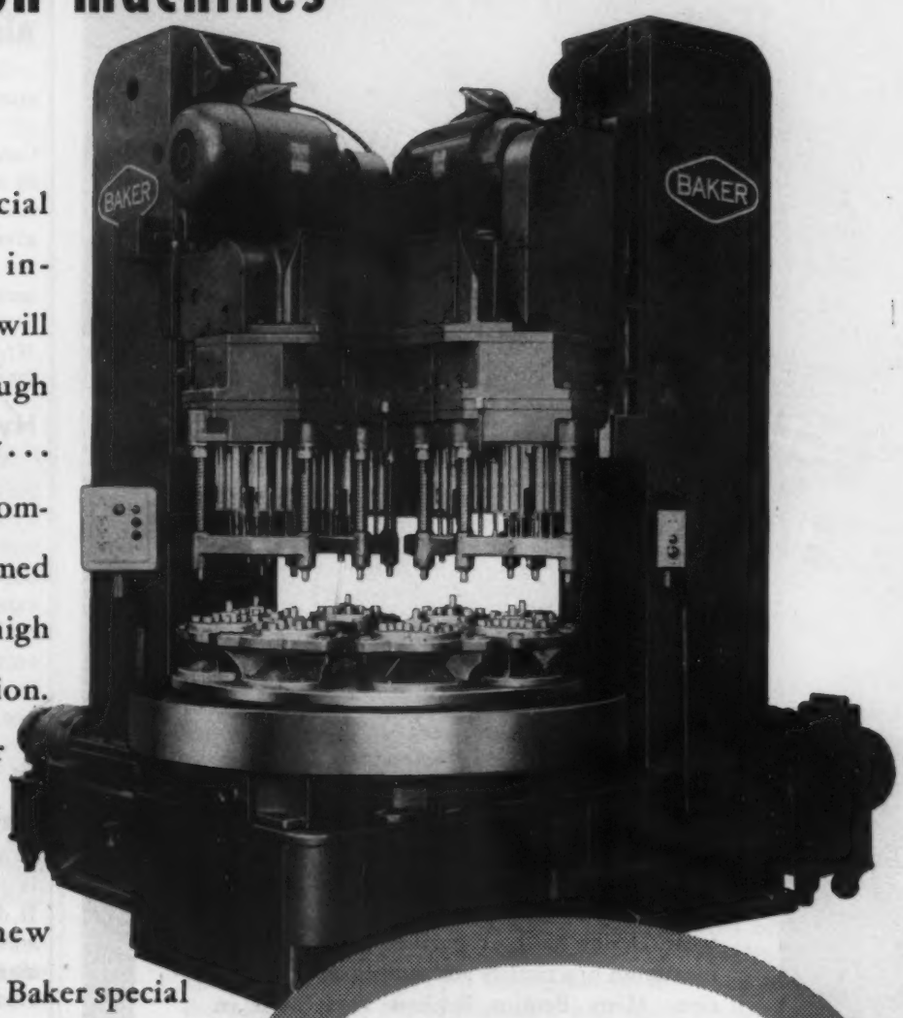
Detroit—Completion of the first unit of Dearborn Motors' $3 million warehouse and research engineering building on East Maple Road, near Birmingham, Mich. has been announced by Thomas A. Farrell, pres., Dearborn Motors Corp.

Robert Flickinger, appointed warehouse manager, was formerly associated with General Motors truck parts department in Pontiac. A section of the new building is being occupied by the research engineering department. A 3-story office building is scheduled for completion this fall.

Cut costs...

Replace obsolete equipment with BAKER production machines

A new Baker Special Production Machine installed in your plant will quickly pay for itself through increased productivity... lower cost per part. Combined operations performed simultaneously result in high quality, low cost production. Take inventory in your plant . . . replace that low-production obsolete machine with a new time saving, cost cutting Baker special machine. Consult Baker engineers regarding your specific problems.



New Baker machine drills and reams 9 holes simultaneously on automotive parts at the rate of 480 parts per hour at 100% efficiency. The machine is equipped with a 4 station automatic indexing table and performs operations on two parts at each station.

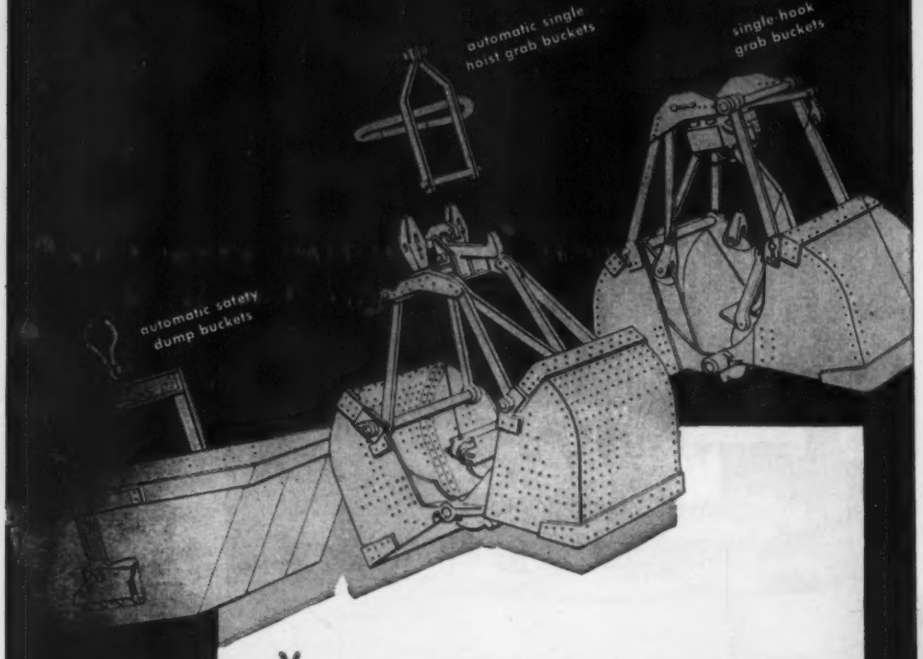
BAKER BROTHERS, INC., Toledo, Ohio

DRILLING, TAPPING, KEYSEATING and CONTOUR GRINDING MACHINES

dependable*

is a word to describe

BROSIUS BUCKETS



* Dependable means trustworthy or reliable, all of which aptly describes Brosius Buckets, and here's why: Brosius Buckets are sturdily built of heavy steel forgings, castings and plates and all parts are oversized for extra wear. Design has been purified to the point of maximum practicality and simplicity of operation. Many Brosius Buckets have been in operation for more than thirty years and they aren't ready for replacement yet. If you want a bucket you can depend on to suit your purpose and last your lifetime, write to Brosius for details and prices.

Edgar E. BROSIUS Company Inc.

SHARPSBURG • PITTSBURGH 12, PA.

European representative: Brassert & Co., Geneva, Switzerland

FREE

PUBLICATIONS

Continued from Page 34

to use it, and presents complete specifications for the equipment. *Mattison Machine Works.*

For free copy insert No. 10 on postcard, p. 35.

Air Gage Shown

Compactness and small overall size are the outstanding features of the Taft-Pierce single dial CompAIRator air gage as described in a new 16-p. bulletin. A description of the duplex dial model is also given. A number of applications for the equipment are shown, and one section describes and illustrates gaging accessories. *Taft-Pierce Mfg. Co.*

For free copy insert No. 11 on postcard, p. 35.

Hydraulic Presses

Verson hydraulic presses, featuring Hydrol, the new simplified hydraulic system, are shown in a new 14-p. catalog. Straight side, post type and other special types, ranging in capacity from 75 to 5000 tons are described, and a special section is devoted to explaining the new hydraulic circuit that is the heart of the press. *Verson Allsteel Press Co.*

For free copy insert No. 12 on postcard, p. 35.

Sand Handling

An authorized job analysis study is the subject of a new 4-p. folder. It describes how the HA Payloader solved several problems in sand and slag handling for one company, increasing efficiency and reducing overall costs. *Frank G. Hough Co.*

For free copy insert No. 13 on postcard, p. 35.

Corrosion-Proof Supplies

Atlas' complete line of chemical construction materials is described in a new bulletin. The publication covers such items as corrosion-proof linings, cements, brick sheathings, protective coatings, acid-proof brick and tile, and corrosion-proof floors. It also gives handy estimating data. *Atlas Mineral Products Co.*

For free copy insert No. 14 on postcard, p. 35.

Resume Your Reading on Page 35

NEW

PRODUCTION IDEAS

Continued from Page 38

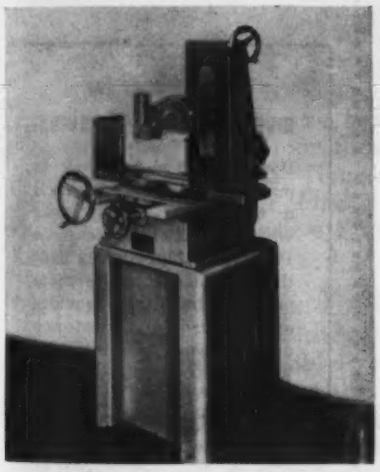
sealed, lubricated-for-life ball bearings; adjustable 12-tooth index stop collar, selector plate, and dog that permit engagement of either 2, 3, 4, 6, or 12 selected equal spaces; push-out nut at back of sleeve for pushing out tight fitting adapters; and a swivel bracket with 360 graduations. *Delta Power Tool Div., Rockwell Mfg. Co.*

For more data insert No. 27 on postcard, p. 35.

Surface Grinder

With 7-in. diam wheel, machine finish grinds parts 12 in. high.

Each machine is checked to grinding accuracy up to 0.0002 in. V-type slides, ground and lapped, are used instead of flat surfaces



and each surface is hand tooled for positive lubrication and sensitive movement. Traverse movement is 8¾ in.; longitudinal 13 in.; vertical 12 in. Standard equipment includes a dynamically balanced 110/220 v ac single phase 60 cycle motor. *Sanford Mfg. Co.*

For more data insert No. 28 on postcard, p. 35.

Dual-Fuel Burner Unit

Switches change boiler unit from oil to gas consumption.

This packaged boiler burner unit can be changed from gas to oil and back by merely throwing switches. The two sizes of this automatic dual-fuel unit cover a range of 1½

wheelabrator®

SAVES $15,980 IN 1 YEAR

cost comparison chart

	FORMER METHOD	WHEELABRATOR METHOD
MACHINE	Airblast Room and a Blast Mill	48" x 72" Wheelabrator Tumblast (30 sq. ft. equip.)
PRODUCTION	3650 tons annually	3650 tons annually (cleaned in both annealed and finished stage)
LABOR REQUIREMENTS	48 man hours daily	16 man hours daily
SAVINGS	DAILY $49.48	MONTHLY $1,331.70 — ANNUALLY $15,980.40

for KEY COMPANY E. ST. LOUIS, ILLINOIS

WHEELABRATOR TUMBLAST REPLACED TWO MACHINES AND OVERCAME FIVE MAJOR PROBLEMS

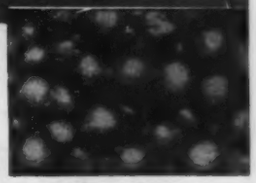
When the Key Company, producers of carbon and alloy steel castings, installed a Wheelabrator Tumblast their scale removal problems were reduced to a minimum. This high speed machine now cleans in a single shift all parts that formerly required two shifts and two machines. It has reduced operating costs $15,980.00 in a single year. In addition, it has had a profound effect on the profitable operation of the entire plant in five ways: (1) It eliminated excessive maintenance costs, (repair parts and labor); (2) It eliminated a second shift and reduced labor requirements 66⅔%; (3) It reduced the use of compressed air for cleaning, releasing it for other operations; (4) It eliminated abrasive waste and reduced abrasive consumption; (5) It eliminated production bottlenecks.

Wheelabrating will make similar savings for you. Write today for complete details.

true-steel shot*

SHOT LASTS 430% LONGER THAN CHILLED IRON

for RAILROAD CAR WHEEL MANUFACTURER

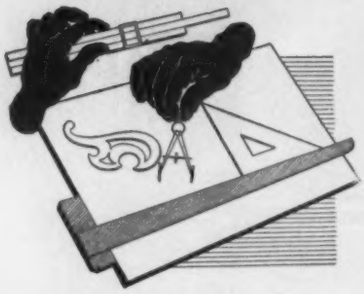


In a seven month's comparative test between TRU-STEEL and Chilled Iron abrasive in cleaning chilled car wheels in a Wheelabrator Cabinet, a Midwestern foundry found that 11.48 wheels could be cleaned per pound of TRU-STEEL Shot, compared with only 2.16 wheels per pound of Chilled Iron Shot. As a result, the use of TRU-STEEL effected important savings in the cost of abrasive per wheel, and at the same time materially reduced maintenance costs on the blast equipment. Write today for full details.

*Tru-Steel Shot is manufactured by Steel Shot Producers, Inc., Butler, Pa.

American WHEELABRATOR & EQUIPMENT CORP.

510 S. Byrkit St., Mishawaka 3, Indiana



Design + Metallurgy = SATISFACTION

For specifying a steel machinery part, the designer and the metallurgist make a fine team.

If the part is properly designed (and this means taking the metallurgical treatment into account) the choice of a steel and its proper treatment become relatively simple.

So important are these aspects of good and poor design of parts in relation to the choice of steel and its treatment—the work of the designer and the metallurgist—that we have compiled a 70-page book on this subject, giving many sketches as examples. "THREE KEYS TO SATISFACTION" is interesting and helpful to designers and metallurgists; it is free on request.

Climax Molybdenum Company

500 Fifth Avenue
New York City

Please send your
FREE BOOKLET
3 KEYS TO SATISFACTION

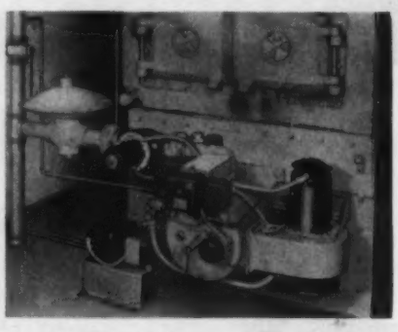
Name.....
Position.....
Company.....
Address.....

MOLY

1A-7 F-9

Continued

million to 3¾ million Btu input for industrial and commercial heating or processing boilers. Fuels range from No. 3 oil or lighter, and natural or mixed gases. An integral blower furnishes all necessary combustion air. An electrically controlled ignition blast pilot assures



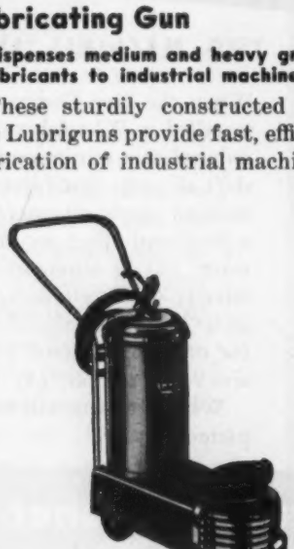
positive main flame ignition. Safety devices shut off burner automatically in the event of flame failure, power failure, or failure of any component part of the burner assembly. The unit uses 115 v, single phase, 60 cycle current and gas at pressures as low as 2.5 in w.c. *North American Mfg. Co.*

For more data insert No. 29 on postcard, p. 35.

Lubricating Gun

Dispenses medium and heavy grade lubricants to industrial machinery.

These sturdily constructed electric Lubriguns provide fast, efficient lubrication of industrial machinery



requiring high pressure application of medium and heavy grade lubricants that will not readily seek their own level. Units are equipped with a manually-operated screw-feed pressure primer, spring loaded to

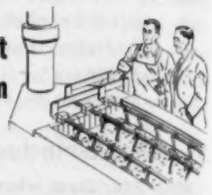
News about

UNICHROME

COATINGS for METALS

METALLIC • ORGANIC
DECORATIVE • PROTECTIVE

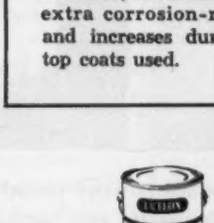
Greatest improvement in chromium plating in 20 years



A self-regulating, high speed bath, Unichrome S.R.H.S. Chromium plates faster, helps to reduce rejects due to "grey" and "rainbow" plate and also due to "missing" and "burning." It lowers the load on generators for a given tankful of work, steps up capacity of chromium plating equipment.

New primer for magnesium and aluminum

Hard-to-coat metals such as magnesium and aluminum get a finish that really sticks when coated with Unichrome Primer AP-10. Not only does this organic primer promote adhesion, but it also provides extra corrosion-resistance and increases durability of top coats used.



How to save money on painting

Many plants need extra rugged protection against acids, alkalies, salts, and water—and get it with Ucilon* Protective Coating Systems. Applied to tanks, ducts, walls, piping, tough Ucilon Coatings are helping many concerns maintain equipment in attractive condition, while reducing frequency and expense of painting.

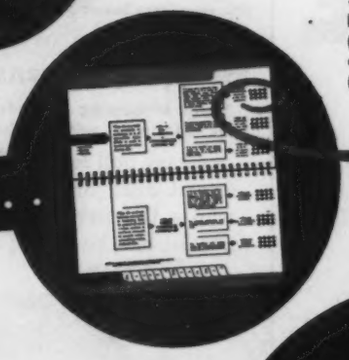
*Trade Mark

UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y.
Detroit 20, Mich. • Waterbury 90, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif.
In Canada:
United Chromium Limited, Toronto, Ont.

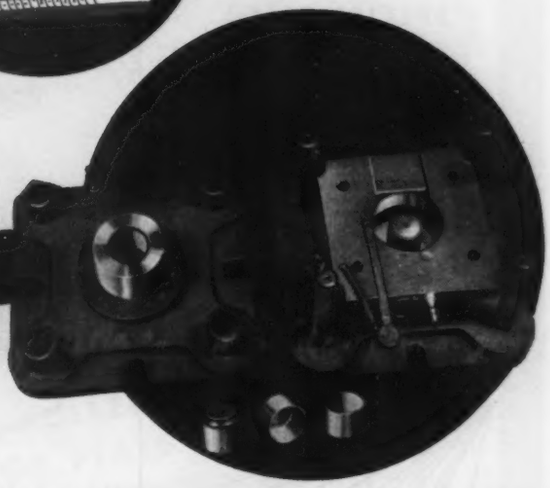
How ONE TOOLMAKER . . .

USED THIS GUIDE . . . . . .



—then use HAMPDEN (Oil-Wear) or No. 610 (Air-Wear)

TO HOLD DOWN UNIT COSTS . . .



AT which step in your tooling process would you welcome real help in reducing tool and die costs? Tool Steel Selection? Heat Treating?—or on-the-job "Trouble-Shooting"? Here's how you, like the maker of the Dies shown here, can start to reduce costs with a Method that helps you at *all 3* steps.

First, to simplify selection, use the handy Selector Section in the Carpenter Matched Tool Steel Manual. Quickly and surely, it enables you to put your finger on the proper steel for best results. Next, to further insure tool and die performance, use the Manual's complete heat treating instructions—they have been simplified beyond anything previously known. It's easy to get started—use the Carpenter Matched Set Method to help you "trouble-shoot" your present tool and die jobs.

For better, lower-cost tooling, put this practical, easy-to-use Method to work, now. Ask for the 189-page Carpenter Matched Tool Steel Manual—just see your Carpenter representative. The Carpenter Steel Company, 121 W. Bern Street, Reading, Pa.

Job:
Compound Blank and Draw Die for forming .031", ¼-hard brass Vent Valve Bodies at the rate of 103 per minute on a punch press.

Problem:
Unit costs were on the upswing because the old dies wore too rapidly, causing frequent and costly machine shutdowns for regrinding.

Solution:
Looking for a die steel with maximum wear resistance, the toolmaker referred to the Selector Section in the Carpenter Matched Tool Steel Manual, and quickly arrived at Carpenter *Hampden* (Oil-Wear).

Heat Treatment:
Simplified instructions in the Manual were followed.

Results:
2 hours of costly machine downtime were eliminated *each day*—production per grind *rose over 300%!* As a matter of interest, the toolmaker takes off approximately .0005" per stoning and gets about 100 grinds from the Blank and Draw Die.

IMMEDIATE DELIVERY FROM LOCAL STOCKS!

Call Your Nearest Carpenter Warehouse or Distributor

Offices and Warehouses in Principal Cities Throughout the U.S.A. and Canada

Export Department, Woolworth Bldg., New York 7, N. Y. "CARSTEELCO"

Carpenter

The Sponsored Tool Steels of Industry

MATCHED

TOOL & DIE STEELS

PAGE WIRE

LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON

ROUND
FLAT
OR
SHAPED

You draw the Shape
—Page can draw the Wire

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to ⅜"; width-to-thickness ratio not exceeding 6 to 1.

for Wire or
Information about Wire—

Get in touch with Page!

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Portland, San Francisco, Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

maintain positive and continuous prime even at low temperatures. *Lincoln Engineering Co.*

For more data insert No. 30 on postcard, p. 35.

Strapping Dispenser

Steel strapping is under control at all times, without backlash.

An easy pull feeds strap smoothly, without drag or sudden stoppages, because the new Straptroller pulls forward on the strap, and back on

the reel at the same time. The dispenser cannot roll in the direction of the pull of the strap, because the strap is dispensed at right angles to the wheels. The device may be used in vertical or horizontal position. *Signode Steel Strapping Co.*

For more data insert No. 31 on postcard, p. 35.

Polishing Compound

A greaseless, non-flammable, quick drying, liquid abrasive.

Leabrament can be sprayed or brushed on polishing and buffing wheels and is suitable for hand or automatic production methods. Grit sizes are from 100 to fine micron. The compound is also suitable for renewing worn abrasive belts. *Lea Mfg. Co.*

For more data insert No. 32 on postcard, p. 35.

Portable Ultraviolet Light

Flashlight batteries power non-destructive testing unit.

For the non-destructive testing of structures, weldments, vessels, and other objects too large for transport to a permanently-installed black-light booth, new Fluoretor

LEVINSON SERVICE at work

Blast Rocks Island Area

The dust collector on a Neville Island by-product gas furnace blew up with a ...ttering roar shortly after ...n today.

EXPLOSION!

Steel Needed FAST

...ld ... The explosion occurred in a furnace unit in an open area of the Pittsburgh Coke and Chemical Co.

Tuesday MAY 23

Call for Levinson Service

Wednesday MAY 24

37,000 lbs. Angles on the Job

And that meant double-quick service. These angles had to be unloaded at our plant, cut to size, punched and shipped, all in twenty-four hours! But that's not all . . . the following day a 40-ft channel had to be delivered, as well as 24,5000 lbs of ½" plate.

We don't say Levinson can do the impossible, but you'll find our organization tuned to step in when an emergency strikes. We try to give performance that keeps ahead of what we promise!

LSS-5

Levinson
STEEL SALES CO.
20TH AND WHARTON STS., S. S.
PITTSBURGH, PA.

combines portability and self-powered operation with facilities to permit observation under the most intense abient light. Standard flashlight batteries power the ultraviolet generator. Power pack is attached to generator by a swivel joint. Light

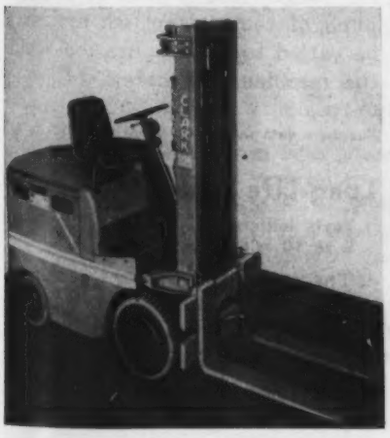
is excluded from area under inspection by light-tight dark chamber around generator head. Specimen-holding end caps fit mouth of dark chamber allowing small objects to be examined without removing them to a darkened area. Focussing eyepiece provides 3X magnification. Filter heads for operation at 2537 or 3660 A are available. *Menlo Research Lab.*

For more data insert No. 33 on postcard, p. 35.

Fork-Lift Truck

Compactness and maneuverability distinguish new Carloader truck.

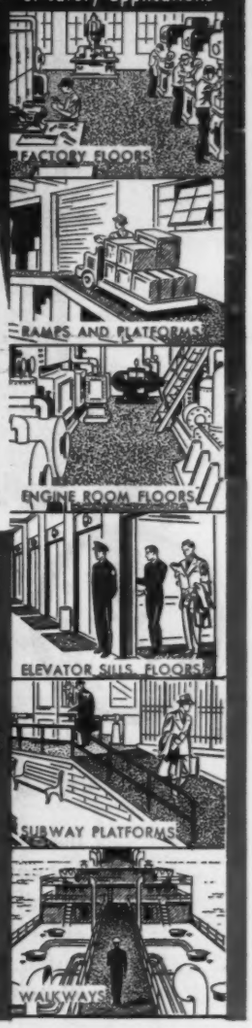
The latest model in the electric carloader line is of 3000-lb capacity with a 24-in. load center-automatic acceleration. Safety is in-



sured by simultaneous action of the directional control-lever lock and a dead-man brake. Automatic acceleration, providing smooth and even variations of motor speed is accomplished through a master power-switch regulated by an automatic

Only one rolled steel floor plate gives you complete *anti-skid* protection

A.W. ALGRIP has hundreds of safety applications



It's New, Revolutionary

ALGRIP

ABRASIVE ROLLED STEEL FLOOR PLATE

There's nothing like it, absolutely nothing like A.W. ALGRIP. It's the one and only Abrasive Rolled Steel Floor Plate. A.W. ALGRIP is made by rolling tough abrasive grain (the same type used in grinding wheels) as an integral part of the upper portion of steel floor plate. Results: A floor plate that's truly non-slip even when wet or on steep inclines. It keeps men's feet safe and secure.

Because Algrip is rolled steel, it is stronger than other abrasive floorings and withstands severe punishment without cracking or chipping. Thin, too, thinner sections may be used without reducing load carrying capacity.

Get complete information about A.W. ALGRIP now. Write or use the coupon for a FREE copy of our 8-Page Catalog.

NEW ■ NEW ■ NEW ■ NEW ■ NEW ■ NEW ■ NEW ■ NEW ■ NEW ■ NEW ■

A.W. ALGRIP ABRASIVE ROLLED STEEL FLOOR PLATE

A Product of **ALAN WOOD STEEL COMPANY**

CONSHOHOCKEN 19, PA.

Gentlemen: *Please rush me complete information and a FREE copy of your 8-PAGE A. W. ALGRIP Booklet.*

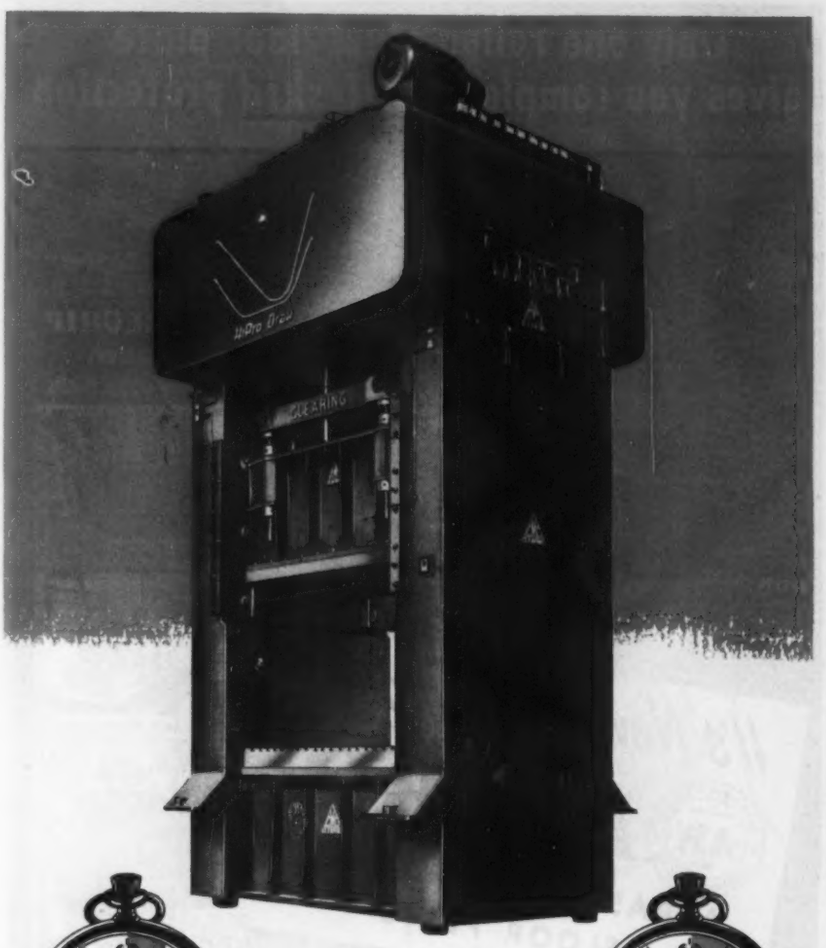
Name _____ *Title* _____

Company _____

Street _____

City _____ *State* _____

Other Products: PERMACLAD Stainless Clad Steel • A.W. SUPER-DIAMOND Floor Plate • Billets Plates • Sheets • Strip • (Alloy and Special Grades)



AT SAME
DRAWING SPEED

Clearing *HiPro-Draw* Cycles in 5 Seconds

Conventional press requires 8½ seconds

UP TO 70% FASTER PRODUCTION

This mechanical, double-acting press provides fast approach and return combined with reduced speed during actual draw. It will deliver up to 70% more pieces per hour without drawing any faster than an ordinary double-action press. Write for full details about the new

CLEARING HiProDraw

CMC CLEARING

CLEARING MACHINE CORPORATION

6499 WEST 65TH STREET • CHICAGO 38, ILLINOIS

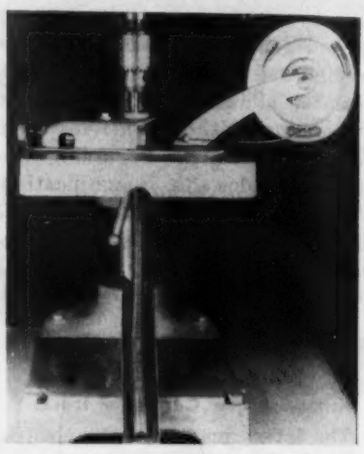
timer. Driving is almost identical with that of an automobile equipped with automatic gear-shifting device. Lift heights are available in a range from the standard 84 in. with overall height of 61 in. with forks down, to 130 in. and overall height of 84 in. with forks down. Standard tires are cushion-type. *Clark Equipment Co.*

For more data insert No. 34 on postcard, p. 35.

Spring Making Machine

Spring-Master converts a drill press to make precision springs.

Springs may be made at high speed on any ½-in. drill press with the Spring-Master. Capacities in-



clude wire from 6 to 28 gage. Outside diameters of finished springs can range from 3/16 to ⅝ in. The pitch of compression springs may be varied to suit application while the machine is running. *Cycloid Corp.*

For more data insert No. 35 on postcard, p. 35.

Long-Life Solenoid

Tests indicate a life of 5 to 10 million operations.

The new short-stroke solenoid features a cast-permafil coil assembly that will not crack and is moisture, oil, shock, and vibration-proof. The solenoid is suitable for any heavy-duty industrial application requiring a push-type solenoid with a maximum stroke that does not exceed 5/16 in. It is available in four models, including strokes of ⅛ in. and 5/16 in. and two stacking thicknesses. *General Electric Co.*

For more data insert No. 36 on postcard, p. 35.

Resume Your Reading on Page 39

Briefs and Bulletins

pig iron prices—Pittsburgh Coke and Chemical Co. has increased its prices of basic, foundry, malleable, and Bessemer pig iron $3 per ton, effective July 24. The new prices are $49.00 for basic; $49.50 for foundry and malleable; and $50.00 for Bessemer. The Lone Star Steel Co., Texas, boosted pig iron prices $2.25. Its new price level is: basic, $41.50; foundry, $42.00; and malleable, $42.00. Pittsburgh Steel Co. increased basic pig $5 a ton to $51.00.

sheets from Canada—Traditionally an importer of sheet steel from the United States, Canada has responded to the pressure of sheet-short American fabricators by exporting limited quantities to this country. Some export permits have been issued since the state of steel in Canada is considered sound and the industry is on the move toward expansion. However, a Steel Co. of Canada official said that his firm was shipping no finished steel in any form to U. S. plants.

grain bins—Commodity Credit Corp. is thinking in terms of additional grain storage capacity of 75 million bushels (THE IRON AGE, July 13, 1950, p. 109). If this holds up, approximately 50,000 tons of galvanized sheets would be needed to build the necessary bins. Ultimate requirements will be based on outcome of meetings with grain men at Chicago, Minneapolis, and Kansas City, this week.

raise prices—Stainless clad sheet producers raised prices 1½¢ per lb last week, following the recent increases in stainless steel prices. Stainless clad plate producers have not increased prices as there was no advance in solid stainless plates. Plate producers have been put in a price squeeze, having to absorb the increased price of nickel.

watching alloy—Steel sales offices are watching requests by types of steel very closely—especially substitution of alloy for carbon bars. Such substitutions are not being allowed, unless there is a good reason. Apparently there is some fear that an alloy shortage may develop.

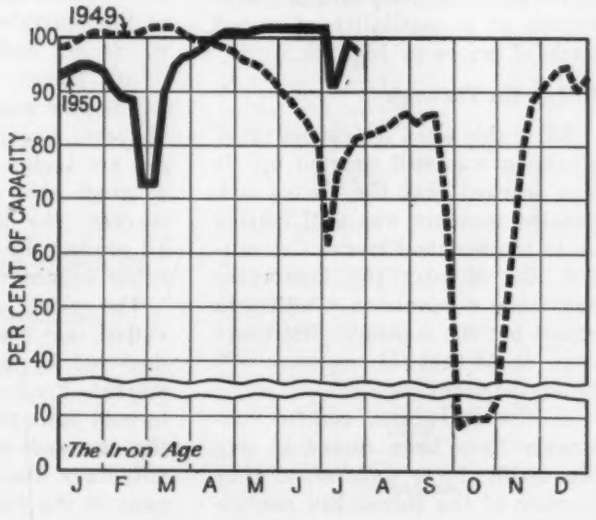
conversion—Conversion operators are reported falling behind in their promises of steel delivery. But there is no effort on the part of their customers to cancel on the basis of default.

Brazil steel expansion—Plans to expand the steel capacity of Brazil's Volta Redonda mill of the National Steel Co. will be encouraged by a credit of $25 million from the Export-Import Bank. Expansion plans include a second blast furnace, two 180-ton openhearths, an electrolytic tinning line, and more rolling equipment. Volta Redonda proposes to lift its ingot capacity from 343,000 to 562,000 tons and its finished steel capacity from 301,000 to 467,000 tons.

no boats to China—Export licenses covering shipments to the mainland of China of all commodities on the positive list were revoked by the Commerce Dept., last week. Licenses for exports to South Korea, Hong Kong, Macao, and Taiwan were unaffected.

tight wire—Several weeks ago one mill was promising 10-day delivery on merchant wire products. But within one week after the Korean war started delivery promises had lengthened to 45 days.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
July 16	101.0	99.0	91.0*	88.0	96.0*	104.0	102.5	104.0	105.0*	106.0	94.0	83.5	97.0	100.0
July 23	101.0	99.5	91.0	88.0	97.0	104.0	100.0	104.0	103.0	105.0	89.0	86.5	115.0	99.5

* Revised.

Nonferrous Metals OUTLOOK

Market Activities

See copper, zinc, lead prices at stabilization levels . . . Tin climbing fast . . . Copper tariff bottled up in Senate . . . Lead buying quiets down . . . Zinc price holds.

by JOHN ANTHONY

New York—There were a few upward price movements of minor importance in metals last week. But the consensus of industry members is that prices of major metals will remain at present levels, with the possible exception of tin. The present prices of copper, zinc and lead are considered to be high enough to make full production possible. And no company or industry wants to take the onus of bringing on price controls. There has been some talk in Washington of a possibility of a roll back of prices to June 25.

Bill to Go Through

Early this week the copper tariff situation was still snarled up. It was learned that the House suspension measure was still bottled up in the Senate Finance Committee. On Monday the Committee had made no decision whether to report out the measure. But there is no doubt that this measure will be forced through.

In the meantime, copper consumers have been forced to pay the tariff. It is understood that in view of the House Bill providing for a year's suspension retroactive to July 1, customs officials have been impounding the copper duty payments with the prospect of rebating them if the measure is enacted into law. Copper fabricators have made no price advances in their products so far to compensate for the duty paid.

Last week the copper scrap market advanced to a firm price of 19½¢ for No. 1 heavy copper. It was learned that foreign copper from Africa has been offered here at the equivalent of 23⅜¢. So far it has not been possible to learn of any takers.

The zinc market remains at the 15¢ level despite the fact that buyers are trying to get many times as much zinc as available in the market. The demand is heavy for all grades. Even Brass Special is being sought very actively.

The price of zinc oxide was raised last week by ¾¢, a move deplored by many factors in the market. Producers are determined to hold down the price of zinc, but the demand is very heavy and voluntary allocation by the company is the rule.

The heavy buying of lead that caused the price advances several weeks ago has subsided. Consumers have apparently covered requirements tempered by the Korean situation.

The price of magnesium ingots was advanced by another 1¢ per lb last week. Sticks were raised 1½¢. This action comes shortly after the upward revision of fabricated products on June 26 following the first advance in ingots and sticks.

Panic Tin Buying

The tin market has been running riot ever since the beginning of the Korean trouble. Profit-taking by professional traders in the Far East reduced last week's prices from the peak of 96½¢ reached on July 14. But early this week the market appeared to be on the upgrade again. Buying was heavy in the domestic and Far Eastern markets. Current prices are not far below the $1.03 post-war peak.

Traders are beginning to speculate on the mechanism by which the government could control the domestic market price. The major trading markets in tin are in Singapore and London. But by far the largest consuming area is here. By establishing a domestic price ceiling for tin, the government could force those markets to adapt their operations to the U. S. price.

NONFERROUS METALS PRICES

	July 19	July 20	July 21	July 22	July 24	July 25
Copper, electro, Conn.	22.50	22.50	22.50	22.50	22.50	22.50
Copper, Lake, Conn.	22.625	22.625	22.625	22.625	22.625	22.625
Tin Straits, New York....	89.50	91.00	93.00	....	96.00	95.50*
Zinc, East St. Louis	15.00	15.00	15.00	15.00	15.00	15.00
Lead, St. Louis	11.80	11.80	11.80	11.80	11.80	11.80

Note: Quotations are going prices.
*Tentative.

MILL PRODUCTS

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 27.4¢; 4S, 61S-O, 29.3¢; 52S, 31.4¢; 24S-O, 24S-OAL, 30.3¢; 75S-O, 75S-OAL, 36.8¢; 0.081 in., 2S, 3S, 28.4¢; 4S, 61S-O, 30.7¢; 52S, 32.8¢; 24S-O, 24S-OAL, 31.4¢; 75S-O, 75S-OAL, 38.5¢; 0.032 in., 2S, 3S, 30.0¢ 4S, 61S-O, 34.0¢; 52S 36.7¢ 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 48-1¢. **Plate:** ¼ in., and heavier: 2S, 3S, F, 24.8¢ 4S-F, 27¢; 52S-F, 28.1¢; 61S-O, 27.6¢; 24S-F, 24S-FAL, 28.1¢; 75S-F, 75S-FAL, 34.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 67¢; 11 to 13, 34.3¢ to 79¢; 23 to 25, 36.3¢ to $1.08; 35 to 37, 43.3¢ to $1.66.

Rod Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 34.5¢ to 31¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 37¢ to 32.5¢.

Screw Machine Stock: Rounds, 11S-T3, R317-T4, ⅛ to 11/32 in., 49.5¢ to 38.5¢; ⅜ to 1½ in., 88¢ to 36¢; 1 9/16 to 3 in., 36¢ to 33¢; 17S-T4 lower by 1¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.; 2S, 36.5¢ to 27¢; 52S, 44.5¢ to 32.5¢; 56S, 47.5¢ to 39¢; 17S-T4, 50.5¢ to 35¢; 61S-T4, 45¢ to 34.5¢; 75S-T-6, 76.5¢ to 55.5¢.

Extruded Tubing, Rounds: 63S-T5; OD in in.: 1¼ to 2, 33.5¢ to 49¢; 2 to 4, 30.5¢ to 41.3¢; 4 to 6, 31¢ to 37.8¢; 6 to 9, 31.5¢ to 33.3¢.

Roofing Sheet, Flat: 0.019 in. x 28 in, per sheet, 72 in., $1.008; 96 in., $1.344; 120 in., $1.679; 144 in., $2.017. **Gage** 0.024 in. x 28 in., 72 in., $1.224; 96 in., $1.633; 120 in., $2.042; 144 in., $2.451. **Coiled Sheet:** 0.019 in. x 28 in., 24.7¢ per lb; 0.024 in. x 28 in., 23.7¢ per lb.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed)

Sheet and Plate: M-O, FS-O. ¼ in. 58¢ to 60¢; 3/16 in. 60¢ to 62¢; ⅛ in. 62¢ to 64¢; B & S gage 10, 63¢ to 65¢; 12, 67¢ to 69¢; 14, 73¢ to 78¢; 16, 80¢ to 85¢; 18, 88¢ to 93¢; 20, $1.00 to $1.05; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, FS, diam in., ¼ in. to 0.311, 66¢; ½ in. to ¾, 50¢; 1¼ to 1.749, 47¢; 2½ to 5 in., 45¢. Other alloys higher. Base: Up to ¾ in., diam, 10,000 lb; ⅞ in. to 1¾ in., 20,000 lb; 1¾ in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, FS, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 59.5¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 55¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 50.5¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 47.5¢ 4 to 6 lb per ft, per. up to 28 in. 46.5¢. Other alloys higher. Base, in weight per ft of shape; Up to ½ lb, 10,000 lb; ½ lb to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, FS, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	69	53
Strip, cold-rolled	75	56
Rods and bars	65	61
Angles, hot-rolled	65	61
Plates	67	62
Seamless tubes	98	86
Shot and blocks	..	46

Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	37.43	....	37.03
Copper, h-r	....	33.28	....
Copper, drawn	....	34.53	....
Low brass	35.52	35.21	....
Yellow brass	34.19	33.88	....
Red brass	35.96	35.65	....
Naval brass	38.90	32.96	34.22
Leaded brass	....	28.54	32.65
Com'l bronze	36.93	36.62	....
Manganese bronze	42.40	36.27	37.85
Phosphor bronze	55.11	55.36	....
Muntz metal	37.13	32.69	34.94
Everdur, Herculoy, Olympic, etc.	42.05	40.99	....
Nickel silver 10 pct	45.48	47.74	....
Arch. bronze	....	....	32.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	17.50
Aluminum pig	16.50
Antimony, American, Laredo, Tex.	24.50
Beryllium metal, 95%, lumps, beads	$95.00
Beryllium copper, 3.75-4.25% Be, dollars per lb contained Be	$30.00
Beryllium aluminum 5% Be, dollars per lb contained Be	$65.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.15
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	22.50
Copper, Lake, delivered	22.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100
Lead, St. Louis	11.80
Lead, New York	12.00
Magnesium, 99.8+%, f.o.b. Freeport Tex., 10,000 lb	22.50
Magnesium, sticks, 100 to 500 lb	39.00¢ to 41.00¢
Mercury, dollars per 76-lb flask f.o.b. New York	$74 to $80
Nickel, electro, f.o.b. New York	51.22
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel	44.25
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz	$74 to $77
Silver, New York, cents per oz.	72.75
Tin, New York	95.50
Zinc, East St. Louis	15.00
Zinc, New York	15.72
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	22.00
No. 120	21.50
No. 123	21.00
80-10-10 ingot	
No. 305	25.50
No. 315	23.50
88-10-2 ingot	
No. 210	31.50
No. 215	29.00
No. 245	24.75
Yellow ingot	
No. 405	19.00
Manganese bronze	
No. 421	23.50

Aluminum Ingot

(Cents per lb, 30,000 lb lots)

95-5 aluminum - silicon alloys	
0.30 copper, max.	20.50-20.75
0.60 copper, max.	20.25-20.75
Piston alloys (No. 122 type)	19.00-19.50
No. 12 alum. (No. 2 grade)	18.25-18.75
108 alloy	19.00-19.50
195 alloy	20.00-20.50
13 alloy	20.50-20.75
AXS-679	19.00-19.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	19.75-20.00
Grade 2—92-95%	18.75-19.00
Grade 3—90-92%	17.75-18.00
Grade 4—85-90%	17.25-17.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	39⅛
Electrodeposited	33¾
Rolled, oval, straight, delivered	36.59
Forged ball anodes	41
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	23
Ball anodes	22
Nickel 99 pct plus	
Cast	68.00
Rolled, depolarized	69.00
Cadmium	$2.30
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79½

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	52.15
Copper sulfate, 99.5 crystals, bbl.	10¾
Nickel salts, single or double, 4-100 lb bags, frt allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	61¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drums	45.85

SCRAP METALS

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	19½	18¾
Yellow brass	16¾	16
Red brass	18⅛	17⅜
Commercial bronze	18⅝	17⅞
Manganese bronze	16⅛	15⅝
Leaded brass rod ends	16½	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.50
No. 2 copper wire	18.50
Light copper	17.50
Refinery brass	18.00*
Radiators	13.00

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	19.50
No. 2 copper wire	18.50
Light copper	17.50
No. 1 composition	16.00
No. 1 comp turnings	15.50
Rolled brass	13.50
Brass pipe	15.00
Radiators	13.00
Heavy yellow brass	11.75-12.00
Aluminum	
Mixed old cast	10.00-10.25
Mixed old clips	10.75-11.00
Mixed turnings, dry	10.00-10.25
Pots and pans	10.00-10.25
Low copper	11.75-12.00

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	16¾—17
No. 2 heavy copper and wire	15¾—16
Light copper	14¾—15
Auto radiators (unsweated)	11¼—11½
No. 1 composition	14 —14¼
No. 1 composition turnings	13½—13¾
Clean red car boxes	12¾—13
Cocks and faucets	12¾—13
Mixed heavy yellow brass	9½— 9¾
Old rolled brass	10½—10¾
Brass pipe	12½—12¾
New soft brass clippings	14¼—14½
Brass rod ends	12¼—12½
No. 1 brass rod turnings	12 —12¼

Aluminum

Alum. pistons and struts	6 — 6½
Aluminum crankcases	8½— 9
2S aluminum clippings	11½—12
Old sheet and utensils	8½— 9
Borings and turnings	5½
Misc. cast aluminum	8½— 9
Dural clips (24S)	8½— 9

Zinc

New zinc clippings	10 —10½
Old zinc	7¾— 8
Zinc routings	5¼— 5½
Old die cast scrap	5½— 5¾

Nickel and Monel

Pure nickel clippings	36 —39
Clean nickel turnings	32 —35
Nickel anodes	36 —39
Nickel rod ends	36 —39
New Monel clippings	15 —19
Clean Monel turnings	10 —14
Old sheet Monel	14 —18
Inconel clippings	22 —26
Nickel silver clippings, mixed	9 —10
Nickel silver turnings, mixed	6 — 7

Lead

Soft scrap, lead	9¾—10
Battery plates (dry)	5¼— 5½

Magnesium

Segregated solids	9 —10
Castings	5½— 6½

Miscellaneous

Block tin	68 —70
No. 1 pewter	48 —50
No. 1 auto babbitt	43 —45
Mixed common babbitt	9¾—10
Solder joints	13½—14
Siphon tops	43 —45
Small foundry type	13 —13½
Monotype	12 —12½
Lino. and stereotype	11 —11½
Electrotype	9¾—10
New type shell cuttings	15 —15¼
Hand picked type shells	6 — 6½
Lino. and stereo. dross	4¼— 4¾
Electro. dross	2¾— 3

MARKETS—PRICES—TRENDS

SCRAP
Iron & Steel

Prices Stabilize; Sellers Fear Controls

Prices on openhearth grades of scrap were unchanged in all markets except Pittsburgh, where a leading mill bought No. 1 heavy melting steel at $41.00 per ton, dropping that price $1.00. Most other changes were upward, but there were few.

The scrap market generally has a much stronger undertone, but there is little buying. Many trade sources are of the opinion that steel mills are staying out of the market waiting for price controls to come into effect.

Meanwhile, the possibility of steel allocation and price fixing on scrap remains only a possibility, though most members of the industry are frankly worried about it. The guessing on the probable levels at which scrap materials might be pegged continues to fall in a wide range and it seems that anybody's guess is as good as any other.

PITTSBURGH—The leading mill here established a price of $41.00 on No. 1 heavy melting steel, off $1.00 from the previous week. On the same purchase, No. 2 heavy melting went for $35.00 and No. 2 bundles $34.00, confirming last week's quotations. The market tone was strong and No. 1 bundles remained at $42.00, top. The turnings market was quiet but strong, and it was conceded that shoveling turnings were worth $34.50. Heavy breakable cast was up $2.00 and malleable was $3.00 stronger. The trade is keeping an eye on the Korean situation and there was speculation about the possibility of price control. If control comes, the feeling is that No. 1 heavy melting might be established at $35.00 or perhaps somewhat higher.

CHICAGO—Scrap prices remained firm in the Chicago area this week. Brokers are offering $37.00 and $35.00 for No. 1 and No. 2 heavy melting steel respectively. Cast iron borings have picked up and there is increased activity in cast grades due to reopening of some plants shut down for vacations. Several mills in the area have restricted shipments of dealer scrap. Fear of price controls is having a restraining effect on prices. One major consumer was expected to come into the market late this week with the possibility of having to pay $38.00 per gross ton for No. 1 heavy melting steel.

PHILADELPHIA—There was new mill buying last week at prices unchanged from those established a month ago. Low phos grades were $1.00 higher. Heavy breakable cast was also up $1.00. Turnings were unchanged. Scrap continues to move in good volume, but the market shows little activity by buyers or sellers. Bundles are still hard to move locally, and reports indicate they are moving to the West. Cast is moving as breakable to mills, but in this market there is no shortage of yard cast. The specter of price control still hovers over the market, influencing operations.

NEW YORK—The market here is fairly steady with a slightly stronger undertone. July, with its hot weather and vacations, is traditionally a slow month. Pricewise nothing at all has happened but the scrap trade is generally worried about the possibility or probability of allocations and price fixing.

DETROIT—With large industrial lists being awarded later this week the Detroit market, which is marking time at the moment, is expected to show evidence of strength. Certainly the downward price trend has been arrested. Most sources agree that bundles on the lists next month will probably go for higher prices than these same items brought a month ago. However, at the moment there is no buying to substantiate any price changes. Meanwhile, uncertainty about future auto production is growing and the industry is carefully weighing the changes in scrap flow that may come from a further shift to wartime production.

CLEVELAND—Purchase of a large tonnage of No. 1 heavy melting steel at $41.00, the quoted price, by a major consumer in the Valley last week has stabilized the market. Here and in the Valley, the market has displayed a consistently strong undertone despite a series of price breaks since the last rise, but brokers are apparently confident they can hold the line. The big test of this market will come with the closing of the railroad and automotive lists.

ST. LOUIS—The scrap market here has a strong undertone but prices are unchanged. The steel mills hesitate to buy material because of the possibility of controls and uncertainty generally because of the Korean war. There is still some buying by short interests. Receipts are low due to hot weather and heavy rains in the territory.

CINCINNATI—Good demand for No. 1 steel, a strong undertone, and a tendency toward higher prices are evident in the market here. Some mills are buying a little tonnage, but indications are that individual consuming mills will make a strong effort to hold the price line. Foundry grades are moving and showing definite strength. At the moment, it would be hard for a broker to cover a big order here for any grade at quoted prices.

BOSTON—Business in the scrap market is virtually at a standstill despite the current situation in the Far East. Mills are continuing to wait before placing new orders. With the exception of No. 2 steel which was up 50¢, openhearth grades remained unchanged. Other changes were slight and prices seem to have stabilized.

BIRMINGHAM—The scrap market remains firm in this district, with dealers expecting an increase around the first of the month when buyers will again be in the market. Evidently in anticipation of higher prices not as much scrap is coming in to brokers as last month. A big pipe foundry started buying to take care of its stepped-up production and was offering $41.00 for No. 1 cupola cast, an increase of $2.00, and $35.00 for stove plate, an increase of 50¢. It also increased its offers for mixed cars.

BUFFALO—While dealers are busy covering recent large orders for steelmaking grades, interest in the scrap market centers on fairly large sales of cupola cast. The market is obviously marking time, pending definite decision on steel allocations and other controls.

IN STEEL

All's well that ends well ON THE JOB

RELIANCE *Job-Fitted* PRODUCTS AND SERVICES

COLD ROLLED STRIP STEEL*

Coils . . . Cut Lengths . . . All Tempers
Slit, Sheared, Deburred
and Round Edge
From WAREHOUSE and
MILL DEPOT STOCKS,
or DIRECT-FROM-MILL

**Detroit Steel Strip is Strip Steel in Name and in Fact*

SHEETS

Cold Rolled . . . Hot Rolled
Hot Rolled Pickled . . . Long Terne
Galvanized
Standard or production sizes
or cut to actual working
dimensions
PRIMES
or COST-SAVING SECONDS**
From
WAREHOUSE STOCKS

***Reliance Job-Fitting Methods apply to seconds as well as primes*

The sheet and strip steel you buy from your mill source is made-to-order for you . . . to your specified grade, size, working quality and finish.

What you buy from your warehouse supplier is ready-made . . . *selected* from in-stock-material to suit your specific need at the time.

But made-to-order or ready-made, out-of-mill or out-of-stock, *the steel must fit your job.*

That's where you can rely on the knowledge and experience of established warehouse organizations . . . seasoned knowledge of the possibilities as well as the limitations of their stocks . . . intimate understanding of your shop methods.

Such knowledge and experience come only from long years of intensive study of steel and its applications.

DEPENDABLE DAN
OUR CUSTOMERS' MAN

That's why you will find Reliance JOB-FITTED service responsive and responsible. It is backed by over 27 years of living with and licking day-in and day-out sheet and strip steel problems.

Try us and see what we mean—*our inventory permitting.*

STEEL—The Nation's Backbone

For Immediate Action Call The Nearest Reliance Plant or Office:

DETROIT STEEL CORPORATION

PRODUCERS OF
Coke and Coal Chemicals • Pig Iron • Ingots
Slabs • Sheet Bars • Billets • Wire Rods
Manufacturers' Wire • Merchant Wire Products
Cold Rolled Strip Steel

GENERAL OFFICES
DETROIT 9, MICHIGAN

RELIANCE STEEL DIVISION

Processors and Distributors JOB-FITTED Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

PLANTS

CLEVELAND PLANT, 3344 E. 80th St., VUlcan 3-3800, Cleveland 4, O.
DETROIT PLANT, 13770 Joy Road, WEbster 3-5866, Detroit 28, Mich.
EASTERN PLANT, State & Edmund Sts. (Hamden), New Haven 7-5781, New Haven 7, Conn.
MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

OFFICES

DAVENPORT, IOWA, 828 Davenport Bank Bldg., Phone 3-7288
DETROIT 4, MICH., 8701 Epworth Blvd., TYler 5-7212
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-9568
INDIANAPOLIS 4, IND., 1406 Fletcher Trust Bldg., FRanklin 3429
JACKSON 18, MICH., 801 Reynolds Bldg., JAckson 3-3258
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4878
ST. LOUIS 8, MO., 4053 Lindell Blvd., LUcas 4558
TOLEDO 4, OHIO, 2114 Ohio Bldg., GArfield 8264
WORCESTER 8, MASS., 330 Main St., WOrcester 5-8868

COPYRIGHT 1950 D.S.C.

Iron and Steel

SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$40.50 to $41.00
No. 2 hvy. melting	34.50 to 35.00
No. 1 bundles	41.50 to 42.00
No. 2 bundles	33.50 to 34.00
Machine shop turn.	28.50 to 29.00
Mixed bor. and ms. turns.	28.50 to 29.00
Shoveling turnings	34.00 to 34.50
Cast iron borings	32.50 to 33.00
Low phos. plate	44.50 to 45.00
Heavy turnings	39.50 to 40.00
No. 1 RR. hvy. melting	43.00 to 43.50
Scrap rails, random lgth.	43.50 to 44.00
Rails 2 ft and under	46.00 to 47.00
RR. steel wheels	45.50 to 46.50
RR. spring steel	45.50 to 46.50
RR. couplers and knuckles	45.50 to 46.50
No. 1 machinery cast	43.50 to 44.00
Mixed yard cast.	38.00 to 38.50
Heavy breakable cast.	35.50 to 36.00
Malleable	46.00 to 47.00

Chicago

No. 1 hvy. melting	$37.00 to $37.50
No. 2 hvy. melting	35.00 to 35.50
No. 1 factory bundles	37.00 to 37.50
No. 1 dealers' bundles	37.00 to 37.50
No. 2 dealers' bundles	29.00 to 30.00
Machine shop turn.	24.50 to 25.50
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	26.00 to 27.00
Low phos. forge crops	42.50 to 43.50
Low phos. plate	40.50 to 41.50
No. 1 RR. hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	43.00 to 44.00
Rerolling rails	47.00 to 48.00
Rails 2 ft and under	47.50 to 48.50
Locomotive tires, cut	44.00 to 45.00
Cut bolsters & side frames	41.00 to 42.00
Angles and splice bars	45.00 to 46.00
RR. steel car axles	57.00 to 58.00
RR. couplers and knuckles	43.50 to 44.50
No. 1 machinery cast.	45.00 to 46.00
No. 1 agricul. cast.	43.00 to 44.00
Heavy breakable cast.	37.00 to 38.00
RR. grate bars	36.00 to 37.00
Cast iron brake shoes	36.00 to 37.00
Cast iron car wheels	41.50 to 42.50
Malleable	47.00 to 48.00

Philadelphia

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	32.00 to 33.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	24.00 to 25.00
Low phos. punchings, plate	37.00 to 38.00
Low phos. 5 ft and under	37.00 to 38.00
Low phos. bundles	33.00 to 34.00
Hvy. axle forge turn.	32.00 to 33.00
Clean cast chem. borings	33.00 to 34.00
RR. steel wheels	38.00 to 39.00
RR. spring steel	38.00 to 39.00
Rails 18 in. and under	41.50 to 42.50
No. 1 machinery cast	38.00 to 39.00
Mixed yard cast	33.00 to 34.00
Heavy breakable cast	35.00 to 36.00
Cast iron carwheels	39.00 to 40.00
Malleable	41.00 to 42.00

Cleveland

No. 1 hvy. melting	$38.00 to $38.50
No. 2 hvy. melting	33.00 to 33.50
No. 1 busheling	38.00 to 38.50
No. 1 bundles	39.50 to 40.00
No. 2 bundles	28.00 to 28.50
Machine shop turn.	24.00 to 24.50
Mixed bor. and turn.	27.00 to 27.50
Shoveling turnings	27.00 to 27.50
Cast iron borings	27.00 to 27.50
Low phos. 2 ft and under	40.00 to 40.50
Steel axle turn.	38.00 to 38.50
Drop forge flashings	38.00 to 38.50
No. 1 RR. hvy. melting	43.00 to 43.50
Rails 3 ft and under	48.00 to 49.00
Rails 18 in. and under	49.00 to 50.00
No. 1 machinery cast.	46.00 to 47.00
RR. cast.	46.00 to 47.00
RR. grate bars	34.00 to 35.00
Stove plate	38.00 to 39.00
Malleable	47.00 to 48.00

Youngstown

No. 1 hvy. melting	$40.50 to $41.00
No. 2 hvy. melting	35.50 to 36.00
No. 1 bundles	40.50 to 41.00
No. 2 bundles	$31.50 to $32.00
Machine shop turn.	31.50 to 32.00
Shoveling turnings	33.50 to 34.00
Cast iron borings	33.50 to 34.00
Low phos. plate	42.50 to 43.00

Buffalo

No. 1 hvy. melting	$36.50 to $37.00
No. 2 hvy. melting	33.00 to 33.50
No. 1 busheling	33.00 to 33.50
No. 1 bundles	34.00 to 34.50
No. 2 bundles	31.00 to 31.50
Machine shop turn.	27.00 to 28.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	28.00 to 29.00
Low phos. plate	38.50 to 39.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	45.00 to 47.00
RR. steel wheels	42.00 to 43.00
RR. spring steel	42.00 to 43.00
RR. couplers and knuckles	42.00 to 43.00
No. 1 machinery cast.	38.00 to 39.00
No. 1 cupola cast.	35.00 to 36.00
Small Indus. malleable	37.00 to 38.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	25.00 to 26.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	24.00 to 25.00
Bar crops and plate	37.00 to 38.00
Structural and plate	36.00 to 37.00
Scrap rails, random lgth.	35.00 to 36.00
Rerolling rails	43.00 to 44.00
Rails 2 ft and under	42.50 to 43.50
Angles & splice bars	40.00 to 41.00
Std. steel axles	34.00 to 35.00
No. 1 cupola cast.	40.00 to 41.00
Stove plate	34.00 to 35.00
Cast iron carwheels	33.00 to 34.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	32.00 to 33.00
No. 2 bundled sheets	31.00 to 32.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	22.00 to 23.00
Rails, random lengths	39.00 to 40.00
Rails 3 ft and under	45.00 to 46.00
Locomotive tires, uncut	39.00 to 40.00
Angles and splice bars	43.00 to 44.00
Std. steel car axles	52.00 to 53.00
RR. spring steel	41.00 to 42.00
No. 1 machinery cast.	39.00 to 40.00
Hvy. breakable cast.	34.00 to 35.00
Cast iron brake shoes	36.00 to 38.00
Stove plate	33.00 to 34.00
Cast iron car wheels	39.00 to 40.00
Malleable	44.00 to 45.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$30.50 to $31.00
No. 2 hvy. melting	26.50 to 27.00
No. 2 bundles	24.50 to 25.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	20.50 to 21.50
Clean cast chem. bor.	28.00 to 29.00
No. 1 machinery cast.	31.00 to 32.00
Mixed yard cast.	29.00 to 29.50
Charging box cast.	29.00 to 29.50
Heavy breakable cast.	29.50 to 30.00
Unstrp. motor blocks	22.00 to 22.50

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$28.00 to $28.50
No. 2 hvy. melting	23.00 to 23.50
No. 1 bundles	28.00 to 28.50
No. 2 bundles	$22.50 to $23.00
Machine shop turn.	20.00 to 20.50
Mixed bor. and turn.	17.00 to 17.50
Shoveling turnings	22.00 to 22.50
No. 1 busheling	28.00 to 29.00
Clean cast chem. borings	23.00 to 24.00
No. 1 machinery cast.	30.00 to 31.00
No. 1 cupola cast.	28.00 to 29.00
Heavy breakable cast.	25.00 to 26.00
Stove plate	25.00 to 26.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	35.50 to 36.50
New busheling	33.50 to 34.50
Flashings	30.00 to 31.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. plate	33.50 to 34.50
No. 1 cupola cast.	38.00 to 40.00
Heavy breakable cast.	31.00 to 32.00
Stove plate	33.00 to 34.00
Automotive cast.	42.00 to 43.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$35.50 to $36.00
No. 2 hvy. melting	27.50 to 28.00
No. 1 bundles	35.50 to 36.00
No. 2 bundles, black	26.50 to 27.00
No. 2 bundles, mixed	25.50 to 26.00
Machine shop turn.	20.50 to 21.00
Mixed bor. and turn.	20.50 to 21.00
Shoveling turnings	23.50 to 24.00
Cast iron borings	23.50 to 24.00
Low phos. 18 in. under	46.00 to 47.00
Rails, random lengths	41.50 to 42.00
Rails, 18 in. and under	49.00 to 50.00
No. 1 cupola cast.	46.00 to 47.00
Hvy. breakable cast.	35.50 to 36.00
Drop broken cast.	48.00 to 49.00

San Francisco

F.o.b. shipping point:

No. 1 hvy. melting	$22.00
No. 2 hvy melting	20.00
No. 1 bundles	22.00
No. 2 bundles	17.00
No. 3 bundles	13.00
Machine shop turn.	9.00
Elec. fur. 1 ft and under	28.00
No. 1 RR. hvy. melting	22.00
Scrap rails, random lgth.	22.00
No. 1 cupola cast.	$32.50 to 34.00

Los Angeles

F.o.b. shipping point:

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	20.00
No. 1 bundles	22.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	9.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	22.00
No. 1 cupola cast.	$37.50 to 40.50

Seattle

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	20.00
No. 1 bundles	18.00
No. 2 bundles	18.00
No. 3 bundles	14.00
Elec. fur. 1 ft and under	$29.00 to 30.00
RR. hvy. melting	21.00
No. 1 cupola cast	35.00
Heavy breakable cast.	20.00

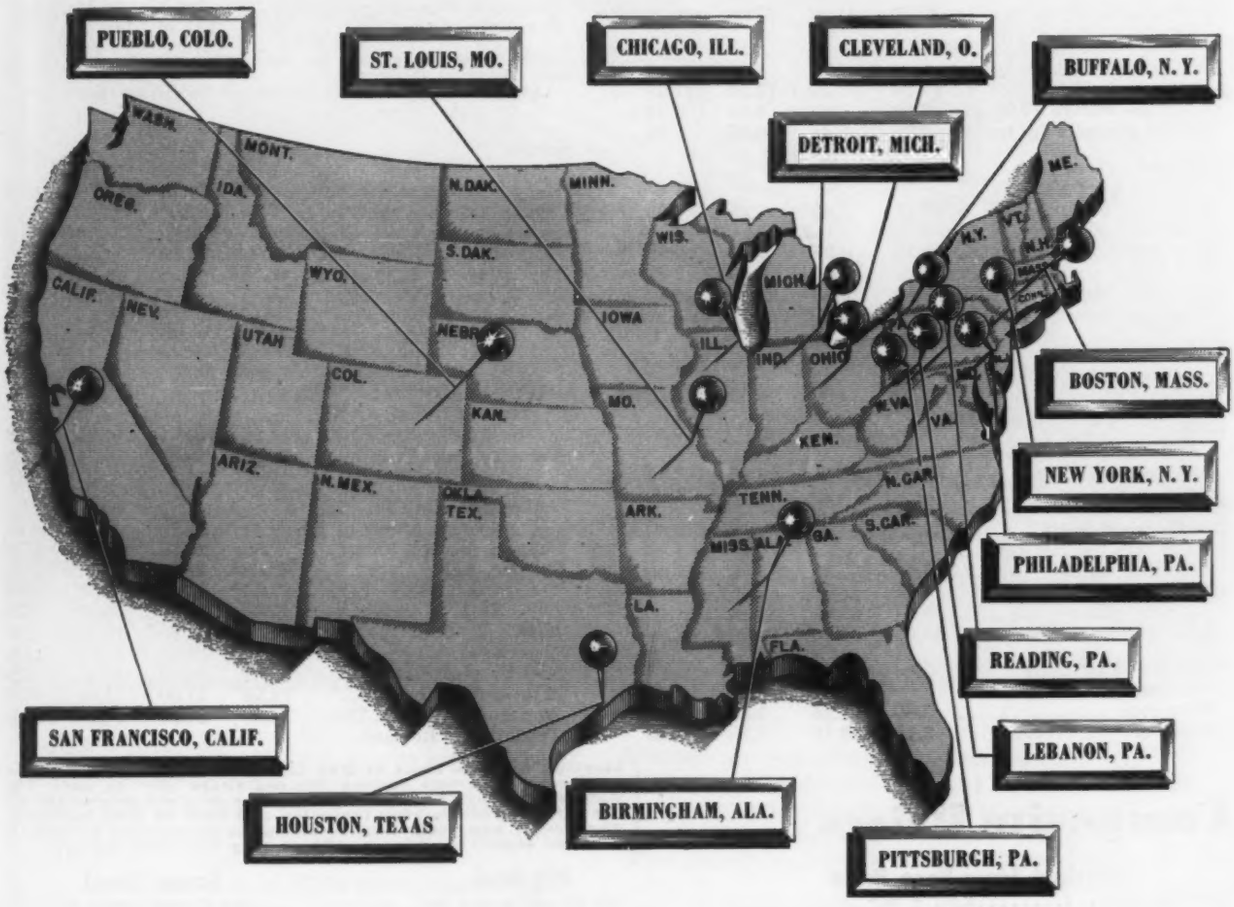
Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 1 bundles	30.00
No. 2 bundles	29.50
Mechanical bundles	28.00
Mixed steel scrap	26.00
Mixed bor. and turn.	23.00
Rails, remelting	30.00
Rails, rerolling	33.00
Bushelings	24.50
Bush., new fact, prep'd.	29.00
Bush., new fact, unprep'd.	23.00
Short steel turnings	23.00
Cast scrap	40.00

For the Purchase or Sale of

Iron and Steel Scrap . . .

CONSULT OUR NEAREST OFFICE



The energy and integrity of our organization is ready to serve your best interests . . .
Since 1889, Luria Brothers & Company, Inc. have made fair dealings their constant aim.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

LURIA BROTHERS AND COMPANY, INC.

Main Office

LINCOLN-LIBERTY BLDG.
Philadelphia 7, Pennsylvania

Yards

LEBANON, PA. • READING, PA.
DETROIT (ECORSE), MICH.
MODENA, PA. • PITTSBURGH, PA.
ERIE, PA.

Branch Offices

BIRMINGHAM, ALA. Empire Bldg.
CHICAGO, ILL. 100 W. Monroe St.
HOUSTON, TEXAS 1114 Texas Av. Bldg.
PITTSBURGH, PA. Oliver Bldg.
BOSTON, MASS. Statler Bldg.
CLEVELAND, O. 1022 Midland Bldg.
LEBANON, PA. Luria Bldg.
PUEBLO, COLO. 334 Colorado Bldg.
BUFFALO, N.Y. Genesee Bldg.
DETROIT, MICH. 2011 Book Bldg.
NEW YORK, N.Y. Woolworth Bldg.
READING, PA. Luria Bldg.
ST. LOUIS, MO. 2110 Railway Exchange Bldg.
SAN FRANCISCO, CAL. Pacific Gas & Elec. Co., Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	July 25, 1950	July 18, 1950	June 27, 1950	July 26, 1949
Hot-rolled sheets	3.35	3.35	3.35	3.25
Cold-rolled sheets	4.10	4.10	4.10	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.25
Cold-rolled strip	4.21	4.21	4.21	4.038
Plate	3.50	3.50	3.50	3.40
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes.	$7.50	$7.50	$7.50	$7.75
Tinplate, electro (0.50 lb)	6.60	6.60	6.60	6.70
Special coated mfg. ternes	6.35	6.35	6.35	6.65
Bars and Shapes: (cents per pound)				
Merchant bars	3.45	3.45	3.45	3.35
Cold-finished bars	4.145	4.145	4.145	3.995
Alloy bars	3.95	3.95	3.95	3.75
Structural shapes	3.40	3.40	3.40	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.50
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.50	4.50	4.50	4.15
Rails: (dollars per 100 lb)				
Heavy rails	$3.40	$3.40	$3.40	$3.20
Light rails	3.75	3.75	3.75	3.55
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$54.00	$54.00	$54.00	$52.00
Slabs, rerolling	54.00	54.00	54.00	52.00
Forging billets	63.00	63.00	63.00	61.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	63.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	3.85	3.85	3.85	3.40
Skelp	3.15	3.15	3.15	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	July 25, 1950	July 18, 1950	June 27, 1950	July 26, 1949
No. 2, foundry, Phila.	$50.42	$50.42	$50.42	$50.56
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti	49.08	49.08	49.08	45.47
No. 2, Birmingham	42.38	42.38	42.38	39.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	49.92	49.92	49.92	49.74
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	73.78
Ferromanganese‡	173.40	173.40	173.40	173.40

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	*$40.75*	$41.75	$41.75	$20.75
Heavy melt'g steel, Phila.	32.50	32.50	33.75	17.50
Heavy melt'g steel, Ch'go	37.25	37.25	37.50	19.75
No. 1 hy. com. sh't, Det.	36.00	36.00	37.50	12.75
Low phos. Young'n	42.75	42.75	44.25	20.75
No. 1 cast, Pittsburgh	43.75	43.75	43.75	27.00
No. 1 cast, Philadelphia	38.50	38.50	39.50	27.50
No. 1 cast, Chicago	45.50	45.50	45.50	31.50
Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.25	$14.25	$14.25	$14.25
Foundry coke, prompt	16.25	16.25	16.25	15.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	22.50	22.50	22.50	17.625
Copper, Lake, Conn.	22.625	22.625	22.625	17.75
Tin, Straits, New York	95.50†	91.00*	78.25	$1.03
Zinc, East St. Louis	15.00	15.00	15.00	10.00
Lead, St. Louis	11.80	11.80	11.30	14.05
Aluminum, virgin	17.50	17.50	17.50	17.00
Nickel, electrolytic	51.22	51.22	51.22	42.93
Magnesium, ingot	22.50	21.50	21.50	20.50
Antimony, Laredo, Tex.	24.50	24.50	24.50	38.50

†Tentative. *Revised.

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

	Finished Steel Base Price	Pig Iron	Scrap Steel
July 25, 1950	3.837¢ per lb.	$46.38 per gross ton	*$36.83* per gross ton
One week ago	3.837¢ per lb.	46.38 per gross ton	37.17 per gross ton
One month ago	3.837¢ per lb.	46.38 per gross ton	37.67 per gross ton
One year ago	3.705¢ per lb.	45.91 per gross ton	19.33 per gross ton

	High	Low	High	Low	High	Low
1950	3.837¢ Jan. 3	3.837¢ Jan. 3	$46.38 Feb. 7	$45.88 Jan. 3	$40.92 June 6	$26.25 Jan. 3
1949	3.837¢ Dec. 27	3.3705¢ May 3	46.87 Jan. 18	45.88 Sept. 6	43.00 Jan. 4	19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396¢ Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	32.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07542¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.88 May 14	13.42 Dec. 10	10.33 Apr. 29
1932	1.89196¢ July 5	1.83910¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Decentralization and *room to grow* are two factors that have become important in considering plant location these days. In the Chicago and Northern Illinois area, you'll find the world's greatest facilities for both.

Here, in an area of 10,000 square miles, there are a multitude of desirable plant sites within a minute's or an hour's access to the greatest industrial center of the United States . . . with all its tremendous transportation, marketing, research, medical, cultural, residential and educational facilities. And this great area offers supplementary industrial advantages that cannot be equalled elsewhere in the world.

Whether the requirements of your business are those of a characteristically compact industrial area or those to be found in smaller but easily accessible cities beyond, the Chicago and Northern Illinois area offers the wide diversity to include the type of space you need.

A letter describing your requirements will bring you a careful analysis of this area's advantages as they apply to *your* business. Or if your business is one of the few that, we feel, requires facilities not available in this territory, we'll tell you that, too.

Just write us. We of course keep all such inquiries confidential.

Industries in the Chicago Area have these outstanding advantages: *Railroad Center of the United States • World Airport • Inland Waterways • Geographical Center of U. S. Population • Great Financial Center • The "Great Central Market" • Food Producing and Processing Center • Leader in Iron and Steel Manufacturing • Good Labor Relations Record • More Than 2,500,000 Kilowatts of Power • Tremendous Coal Reserves • Good Government • Good Living • Good Services for Tax Dollars.*

TERRITORIAL INFORMATION DEPARTMENT

Marquette Building—140 South Dearborn Street, Chicago 3, Illinois—Phone RAndolph 6-1617

COMMONWEALTH EDISON COMPANY • PUBLIC SERVICE COMPANY OF NORTHERN ILLINOIS
WESTERN UNITED GAS AND ELECTRIC COMPANY • ILLINOIS NORTHERN UTILITIES COMPANY

IRON AGE

STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$50.00[1]													$50.00[31]
Alloy, net ton	$51.00[1,17]													$51.00[31]
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$53.00[1]	$53.00[1]	$53.00[1]				$57.00[13]		$53.00[3]	$58.00[26]	$53.00[3]			
Carbon forging billets, net ton	$63.00[1]	$63.00[1,4]	$63.00[1,3]	$63.00[4]			$63.00[25]		$63.00[3,4]	$65.00[26]	$63.00[3]			$66.00[31]
Alloy, net ton	$66.00[1,17]	$66.00[1,4]	$66.00[1]		$66.00[4,42]		$66.00[13]	$66.00[3]	$66.00[3,4]	$68.00[26]	$66.00[3]			$66.00[31]
PIPE SKELP	3.15[1]						3.15[1,4]							
WIRE RODS	3.85[2,18]	3.85[2,4,33]	3.85[6]	3.85[2]			3.85[6]				3.85[3]	3.95[3]		
SHEETS Hot-rolled (18 ga. & hvr.)	3.35[1,5,9,15]	3.35[23]	3.35[1,6,8]	3.35[4,5]			3.35[1,4,6] 3.50[13]		3.35[3]	3.45[26]		3.35[3]		3.55[12] 4.15[47]
Cold-rolled	4.10[1,5,7,9,15] 5.10[62]		4.10[1,6,8]	4.10[4,15]		4.10[7]	4.10[4,6]		4.10[3]			4.10[3]	4.30[22]	4.30[12]
Galvanized (10 gage)	4.40[1,9,15]		4.40[1,8]		4.40[4]		4.65[64] 4.75[44]					4.40[3]		
Enameling (12 gage)	4.40[1]		4.40[1,8]	4.40[4]		4.40[7]	4.40[6] 4.90[76]						4.60[22]	4.70[12]
Long terne (10 gage)	4.80[9,15]		4.80[1]			4.80[7]	4.80[64]							
Hi Str. low alloy, h.r.	5.05[1,5,9]	5.05[1]	5.05[1,6,8]	5.05[4,5]			5.05[1,4,6,13]		5.05[3]	5.05[26]		5.05[3]		5.25[12]
Hi str. low alloy, c.r.	6.20[1,5,9]		6.20[1,6,8]	6.20[4,5]			6.20[4,6,13]		6.20[3]			6.20[3]		6.40[12]
Hi str. low alloy, galv.	6.75[1]											6.75[3]		
STRIP Hot-Rolled	3.25[5,7,9,28] 3.58[41]	3.25[3,66]	3.25[1,6,8]	3.25[5]			3.25[1,4,6] 3.50[13]		3.25[3]	3.35[26]		3.25[3]		3.45[12] 4.05[47]
Cold-rolled	4.15[5,7,9] 4.50[63]	4.30[5] 4.50[66]	4.30[5]	4.15[2,5]		4.15[7]	4.15[4,6,48,49] 4.50[13,49]		4.15[3]			4.15[3]		4.35[12] 4.75[68] 4.95[47]
Hi str. low alloy, h.r.	4.95[9]		4.95[1,6,8]	4.95[5]			4.95[1,4,6,13]		4.95[3]	4.95[26]		4.95[3]		5.15[12]
Hi Str. low alloy, c.r.	6.20[9]			6.20[2,5]			6.20[4,6,13]		6.40[3]			6.40[3]		6.40[12]
TINPLATE† Cokes, 1.50-lb base box 1.25 lb, deduct 20¢	$7.50[1,5,9,15]		$7.50[1,6,8]				$7.50[4]					$7.60[3]	$7.70[22]	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 29 gage Hollowware enameling	5.30[1,5,15]		5.30[1,9]				5.30[4]					5.40[3]	5.50[22]	
BARS Carbon steel	3.45[1,5,9]	3.45[1,4,33]	3.45[1,6,8]	3.45[4]	3.45[4]		3.45[1,4,6]		3.45[3,4]		3.45[3]			3.65[13]
Reinforcing‡	3.45[1,5]	3.45[4]	3.45[1,6,8]	3.45[4]			3.45[1,4,6]		3.45[3,4]		3.45[3]	3.45[3]		
Cold-finished	4.10[5] 4.15[3,4,17,59,69,71]	4.15[3,23,69,70]	4.15[4,73,74]	4.15[2,61]	4.15[4,32,33]		4.15[4,40,57]		4.15[70]					4.35[12] 4.30[64]
Alloy, hot-rolled	3.95[1,17]	3.95[1,4,33]	3.95[1,6,8]		3.95[4]		3.95[1,6,35]	3.95[3]	3.95[3,4]		3.95[3]			4.25[12]
Alloy, cold-drawn	4.90[2,17,52,69,71]	4.90[2,33,69,70]	4.90[4,73,74]	4.90[2,61]	4.90[4,32,33]		4.90[4,35,57]	4.90[3]	4.90[3,70]					5.05[64]
Hi str. low alloy, h.r.	5.20[1,5]		5.20[1,6,8]	5.20[4]			5.20[1,6]	5.20[3]	5.20[3]		5.20[3]			5.40[12]
PLATE Carbon steel	3.50[1,5]	3.50[1]	3.50[1,6,8]	3.50[4]			3.50[1,13]		3.50[3]	3.60[26]	3.50[3]	3.50[3]		3.75[12]
Floor Plates	4.55[1]	4.55	4.55[3]	4.55[3]						4.55[26]				
Alloy	4.40[1]	4.40[1]	4.40[1]				4.40[13]			4.40[26]	4.40	4.40[3]		
Hi Str. low alloy	5.35[1,5]	5.35[1]	5.35[1,3]	5.35[4,5]			5.35[5]			5.35[26]	5.35[3]	5.35[3]		5.60[13]
SHAPES, Structural	3.40[1,5,9]	3.40[1,23]	3.40[1,6,8]					3.45[3]	3.45[3]		3.45[3]			
Hi Str. low alloy	5.15[1,5]	5.15[1]	5.15[1,6,8]				5.15[5]	5.20[3]	5.20[3]		5.20[3]			
MANUFACTURERS' WIRE Bright	4.50[2,5,18]	4.50[2,4,12,33,34]		4.50[2,77]			4.50[6]	Kokomo=4.60[39]			4.50[3]	4.60[3]		Duluth=4.50[3] Pueblo=4.75[14]
PILING, Steel Sheet	4.20[1,9]	4.20[1]							4.20[3]					

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
					INGOTS Carbon forging, net ton
	$58.00[83]				Alloy, net ton
		$83.00[11]	F=$72.00[19]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$71.00[83]	$63.00[11]	F=$82.00[19]	Geneva=$63.00[16]	Carbon forging billets, net ton
	$74.00[83]		F=$85.00[19]		Alloy net ton
					PIPE SKELP
	4.25[83]	3.85[11]	SF=4.50[24] LA=4.65[24,62]	Portsmouth=3.85[30] Worcester=4.15[2]	WIRE RODS
		3.35[4,11]	SF, LA=4.05[24] F=4.25[19]	Ashland=3.35[7] Niles=3.50[64]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.10[11]	SF=5.05[24] F=5.00[19]		Cold-rolled
		4.40[4,11]	SF, LA=5.15[24]	Ashland=4.40[7] Kokomo=4.50[30]	Galvanized (10 gage)
					Enameling (12 gage)
					Long ternes (10 gage)
		5.05[11]	F=6.74[19]		Hi Str. low alloy, h.r.
			F=7.05[19]		Hi Str. low alloy, c.r.
					Hi Str. low alloy, galv.
3.85[83]	3.85[83]	3.25[11]	SF, LA=4.00[24,62] F=4.40[19], S=4.25[62]	Ashland=3.25[7] Atlanta=3.40[65]	STRIP Hot-rolled
			F=5.75[19] LA=5.85[27]	New Haven=4.65[2], 5.00[68] Trenton=5.00[85]	Cold-rolled
		4.95[11]	F=6.84[19]		Hi Str. low alloy, h. r.
			F=6.95[19]		Hi Str. low alloy, c. r.
		7.60[11]	SF=8.25[24]		TINPLATE Cokes, 1.50-lb base box 1.25 lb, deduct 20¢
Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.05[83]	3.85[83]	3.45[4,11]	SF, LA=4.15[24] LA=4.15[62]	Atlanta=3.60[65]	BARS Carbon steel
4.05[83]	3.85[83]	3.45[4,11]	SF, S=4.20[62] F=4.10[19]	Atlanta=3.60[65]	Reinforcing‡
				Putnam, Newark=4.55[69]	Cold-finished
4.55[83]	4.35[83]		LA=5.00[62] F=4.95[19]		Alloy, hot-rolled
				Newark,[69] Worcester[2]=5.20 Hartford=5.20[4]	Alloy, cold-drawn
		5.20[11]	F=6.25[19]		Hi Str. low alloy, h.r.
	3.90[83]	3.50[4,11]	F=4.10[19] S=4.40[62] Geneva=3.50[16]	Claymont=3.60[39] Coatesville=3.60[21] Harrisburg=3.85[36]	PLATE Carbon steel
				Harrisburg=4.55[36]	Floor plates
			F=5.40[19]	Coatesville=4.50[21]	Alloy
		5.35[11]	F=5.95[19]	Geneva=5.35[16]	Hi Str. low alloy
4.00[83]	3.80[83]	3.40[11]	SF=3.95[62] LA=4.00[24,62]	Phoenixville=3.45[56] Geneva=3.40[16]	SHAPES, Structural
		5.15[11]	F=4.00[19] S=4.05[62]	Fontana=5.75[19] Geneva=5.15[16]	Hi Str. low alloy
5.10[83]	4.90[83]	4.50[4,11]	SF, LA=5.45[24,62]	Portsmouth=4.50[30] Worcester=4.80[2]	MANUFACTURERS' WIRE Bright

Notes: †Special coated mfg ternes deduct $1.15 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $1.90 from 1.50-lb coke base box. ‡Straight lengths only from producer to fabricator.

KEY TO STEEL PRODUCERS

With Principal Offices

1 Carnegie-Illinois Steel Corp., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calif. Cold Rolled Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Worth Steel Co., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimmons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Francisco
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wyckoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit
85 John A. Roebling's Sons Co., Trenton, N. J.

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	13.75	14.50	16.00	15.50	23.75	19.25	21.00	12.25	14.25	12.50
Slabs, billets, rerolling	18.00	19.25	21.25	20.25	31.25	25.50	27.75	16.50	19.50	16.25
Forg. discs, die blocks, rings	32.00	32.00	34.50	33.50	50.50	38.00	42.50	26.00	26.50	26.50
Billets, forging	25.75	25.75	27.75	27.00	40.50	30.50	34.25	21.00	21.50	21.50
Bars, wire, structurals	30.00	30.00	32.50	31.50	47.50	35.50	40.00	24.50	25.00	25.00
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50-27.00	26.50
Sheets	39.00	39.00	41.00	41.00	54.50	47.00	51.50	34.50	35.00	37.00
Strip, hot-rolled	25.50	27.00	31.25	29.00	47.25	35.75	40.00	22.50	29.25	23.00
Strip, cold-rolled	32.00	34.50	38.00	36.50	56.50	46.00	50.00	28.50	35.00	29.00

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38,39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.

Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb.
Armature	6.20
Electrical	6.70
Motor	*7.95
Dynamo	8.75
Transformer 72	9.30
Transformer 65	9.85
Transformer 58	10.55
Transformer 52	11.35

PRODUCING POINTS—Beech Bottom, W. Va., 15; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22*; add 0.20¢; Indiana Harbor, Ind., 3; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

MERCHANT WIRE PRODUCTS

To dealers, f.o.b. mill	*Base Column Pittsburg, Calif.*
Standard & coated nails*	106 125§
Woven wire fence†	116 139
Fence posts, carloads††	116 ...
Single loop bale ties	113 137
Galvanized barbed wire**	126 146
Twisted barbless wire	126 146

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet; Johnstown, 112.

	Base per 100 lb	*Pittsburg, Calif.*
Merch. wire annealed‡	$5.35	$6.30
Merch. wire, galv.‡	5.60	6.55
Cut nails, carloads‡‡	6.75	...

‡ Add 30¢ at Worcester; 20¢ at Chicago; 10¢ at Sparrows Pt.
‡‡ Less 20¢ to jobbers.
§ Torrance 126.

PRODUCING POINTS — *Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire:* Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa., (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only). 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City, 83.

Fence Posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26; Warehame, Mass., 53.

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.40
Joint bars, per 100 lb	4.40
Light rails, per 100 lb	3.75

	Base Price cents per lb
Track spikes†	5.60
Axles	5.25
Screw spikes	8.60
Tie plates	4.20
Pittsburg, Torr., Calif.; Seattle	4.35
Track bolts, untreated	5.85
Track bolts, heat treated, to railroads	9.10

†Kansas City, 5.85¢.

PRODUCING POINTS—*Standard rails:* Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, 3; Minnequa, 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, 6; Youngstown, 4.

Track bolts: Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Indiana Harbor, Ind., 79; Johnstown, Pa., 3.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburg, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

Numbers after producing points correspond to steel producers. See key on Steel Price page.

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price about $200.00 per net ton

Standard, T & C

Steel, Buttweld*	Black	Galv
⅛-in.	40½ to 38½	21 to 19
¼-in.	43½ to 41½	25 to 23
1-in.	46 to 44	28 to 26
1¼-in.	46½ to 44½	28½ to 26½
1½-in.	47 to 45	29 to 27
2-in.	47½ to 45½	29½ to 27½
2½ to 3-in.	48 to 46	30 to 28
Steel, lapweld		
2-in.	38	19½
2½ to 3-in.	42	23½
3½ to 6-in.	43 to 40	24½ to 21½
Steel, seamless		
2-in.	36	17½
2½ to 3-in.	39	20½
3½ to 6-in.	41	22½
Wrought iron, buttweld		
⅛-in.	+26½	+56
¼-in.	+16½	+45
1 & 1¼-in.	+10½	+36
1½-in.	+ 4½	+32½
2-in.	+ 4	+32
Wrought iron, lapweld		
2-in.	+13½	+40
2½ to 3½-in.	+11	+35½
4-in.	+ 6	+29½
4½ to 8-in.	+ 8	+31
9 to 12-in.	+18	+40½

Extra Strong, Plain Ends

Steel, buttweld		
⅛-in.	39½ to 37½	21½ to 19½
¼-in	43½ to 41½	25½ to 23½
1-in.	45½ to 43½	28½ to 26½
1¼-in.	46 to 44	29 to 27
1½-in.	46½ to 44½	29½ to 27½
2-in.	47 to 45	30 to 29
2½ to 3-in.	47½ to 45½	30½ to 28½
Steel, lapweld		
2-in.	37	19½
2½ to 3-in.	42	24½
3½ to 6-in.	44½ to 41½	27 to 24
Steel, seamless		
2-in.	35	17½
2½ to 3-in.	38	21½
3½ to 6-in.	42½	25
Wrought iron, buttweld		
⅛-in.	+22	+50
¼-in.	+15½	+43
1 to 2 in.	+ 5½	+32
Wrought iron, lapweld		
2-in.	+10½	+36½
2½ to 4-in.	+ 1	+25
4½ to 6-in.	+ 5	+29½
7 & 8-in.	list	+24½
9 to 12-in.	+11½	+33½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld lapweld steel pipe, jobbers are granted a discount of 5 pct.
* Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut lengths 10 to 24 ft inclusive.

OD in.	gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	$20.61	$24.24	$19.99	23.51
2½	12	27.71	32.58	26.88	31.60
3	12	30.82	36.27	29.90	35.18
3½	11	38.52	45.38	37.36	43.99
4	10	47.82	56.25	46.39	54.56

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 20¢ to base price except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (18 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140 Ann.
Baltimore	5.15	6.39[1]	6.55[2] 6.65	5.59–5.68[11]	....	5.40–6.04[11]	5.69	5.59	6.19	9.69	9.99	11.12	11.49
Birmingham*	5.15[10]	5.95	6.15[7]	5.10	....	5.40	5.25	5.10	6.00	....	....	....	....
Boston	5.75	6.55[10]	6.94[3] 7.14	5.70	6.00–6.05	6.08	5.75	5.60	6.10–6.00	9.70–9.97	9.80–10.00	11.15	11.48
Buffalo	5.15	5.95	6.94	5.41	7.27	5.85	5.35	5.15	5.75	9.80	9.90	11.05	11.35
Chicago	5.15	6.20	6.85	5.10	6.80	5.40	5.25	5.10	5.65	9.25	9.55	10.70	11.00
Cincinnati*	5.42–5.97	5.99–6.24	6.39	5.35	....	5.79	5.64	5.35–5.54	5.95–6.25	9.60–9.81	9.90–10.11	11.05–11.25	11.35–11.56
Cleveland	5.15	5.95	7.00–7.10	5.24	6.35	5.52	5.37	5.12	5.75	9.36	9.66	10.81	11.11
Detroit	5.33	6.09–6.33	7.09	5.49	6.43–6.80	5.88–5.79	5.64–5.68	5.30	5.91	9.56	9.86	11.01	11.31
Houston	6.00	....	....	6.10	....	6.00	5.95	6.10	7.80	10.35–10.45	10.50–10.60	11.50	11.85–12.10
Indianapolis	....	....	....	....	7.36	....	....	....	6.15	....	....	....	....
Kansas City	5.75	6.55	7.45	5.70	6.95	6.00	5.85	5.70	6.35	9.85	10.15	11.30	11.60
Los Angeles	5.90	7.45	7.60[2]	5.95	8.35[16]	6.00	5.90	5.90	7.55	10.75	10.75	12.45	12.75
Memphis	5.93	6.58	....	5.98	6.80–6.51	6.08	5.93	5.98	6.51	....	....	....	....
Milwaukee	5.29	6.09	6.94–6.99	5.24	6.32	5.54	5.39	5.24	5.89	9.39	9.69	10.84	11.14
New Orleans*	5.80[1]	6.75	....	5.55[1]	6.80	5.65	5.55[1]	5.55[1]	6.75	....	....	....	....
New York	5.55	6.85[1] 6.89[1]	7.20[2]	5.84	6.90[1] 6.76	5.90	5.65	5.75	6.80 6.44	9.60	9.90	11.05	11.38
Norfolk	6.10[13]	7.00	....	6.30[13]	....	6.15[13]	6.20[13]	6.15[13]	7.20[13]	....	....	....	....
Philadelphia*	5.30	6.35	6.80	5.65	6.29	5.65	5.45	5.65	6.21	9.35	9.65	10.80	11.10
Pittsburgh	5.15	6.45 5.95	6.85[2] 6.60	5.20	5.95–6.00	5.35	5.25	5.10	5.75	9.25	9.55	10.70	11.00
Portland	6.60–7.10[1]	8.40[2]	....	6.85[9]	....	6.40[9]	6.50	6.45–6.45[9]	8.60[14]	12.00[18]	11.60[18]	....	....
Salt Lake City	5.85	6.70	....	7.45	8.75	6.10[3]	5.90	7.35[3]	8.75	....	....	....	....
San Francisco*	6.20	7.60[2]	7.65[2]	6.15	7.85[16]	6.10	6.00	6.00	7.55	10.75	10.75	12.45	12.75
Seattle	6.60[4]	8.15[2]	8.40[2]	6.85[4]	....	6.35[4]	6.20[4]	6.35[4]	8.50[14]	....	11.60[18]	....	13.60[18]
St. Louis	5.48	6.28	7.18	5.43	6.68–7.54	5.73	5.58	5.43	6.09	9.58	9.88	11.03	11.33
St. Paul*	5.71	6.51	7.41	5.66	6.16–6.82	5.96	5.81	5.66	6.31	9.81	10.11	11.26	11.56

BASE QUANTITIES: (*Standard unless otherwise keyed on prices.*) Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets: 2000 to 9999 lb. Cold-finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

Exceptions:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 to 5999 lb; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 400 to 9999 lb; (10) 500 to 9999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 9999 lb; (16) 6000 lb and over; (17) up to 1999 lb; (18) 1000 to 4999 lb; (19) 1500 to 3499 lb; (20) CR sheets may be combined for quantity; (21) 3 to 24 bundles.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.00	49.50	.....
Birmingham	41.88	42.38	.....	.....	.....
Buffalo	46.00	46.50	47.00	.....	.....
Chicago	46.00	46.50	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Daingerfield, Tex.	41.50	42.00	42.00	.....	.....
Duluth	46.00	46.50	46.50	47.00	.....
Erie	46.00	46.50	46.50	47.00	.....
Everett	.....	50.50	51.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	46.00	46.50	.....	.....	.....
Pittsburgh	46.00–51.00	46.50–49.50	46.50–49.50	47.00–50.00	.....
Geneva, Utah	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	48.00	48.50	49.00	49.50	.....
Toledo	46.00	46.50	46.50	47.00	.....
Troy, N. Y.	48.00	48.50	49.00	.....	54.00
Youngstown	46.00	46.50	46.50	47.00	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	50.50	51.00	.....	.....
Boston	Steelton	6.90	.....	.....	.....	.....	60.90
Brooklyn	Bethlehem	4.29	.....	52.79	53.29	53.79	.....
Cincinnati	Birmingham	6.70	48.58	49.08	.....	.....	.....
Jersey City	Bethlehem	2.63	.....	51.13	51.63	52.13	.....
Los Angeles	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	.....
Philadelphia	Steelton	3.09	.....	.....	.....	.....	57.09
Rochester	Buffalo	2.63	48.63	49.13	49.63	.....	.....
San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Syracuse	Buffalo	3.58	49.58	50.08	50.58	.....	.....

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38c per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct C/L per g.t., f.o.b. Jackson, Ohio—$57.00; f.o.b. Buffalo, $58.25. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.

DRAVO HEATERS

Saved $530,000*

in mammoth new auto plant

*Compared with conventional steam system cost.

Half a million is important money in anybody's language—and it gets more important when it's SAVED instead of spent.

That's just what happened when a leading automobile manufacturer recently built a mammoth new body plant, with over 600,000 sq. ft. of floor space, and with ceiling heights ranging up to 52-feet. Heat requirements, including fresh air tempering provisions, totalled 54,250,000 Btu. Lowest quoted price for a conventional steam boiler plant was $860,000. ACTUAL cost of a complete Dravo *Counterflo* Heater installation of 53 units was $330,000. These direct-fired warm-air heaters take care of all open-space heating requirements of the manufacturing area of the plant.

Bear in mind that these savings involved no compromise with heating effectiveness. The top-flight engineers responsible for selection knew how vital *comfort* is in keeping employes contented and promoting top output. They looked *first* for the finest in heating results . . . and *second* for economies. They found both profitably combined in Dravo Heaters.

Neither did this saving come from "cutting corners" in building the heater, but rather through the basic simplicity of method and equipment. Each of the oil-fired space heaters manufactures heat "on demand" to blanket its own assigned area with warmth. It also introduces fresh, tempered air into the building as needed. Modulating burner controls permit continuous operation and continuous air circulation. This minimizes temperature fluctuation, assures maximum comfort in all weathers, and conserves fuel—for when any section needs LESS heat, its unit burns LESS fuel. Units all have the Underwriters' Laboratories label. They can be converted from oil to gas, should the fuel situation make this desirable.

This spectacular saving has been duplicated on a lesser scale in thousands of smaller plants. If you are concerned with heating any new or old building, you owe it to yourself to find out how Dravo *Counterflo* Heaters are serving and saving for others . . . and how they can save both system costs and operating costs for YOU. Look in the yellow section of your phone book—or write us direct at Dravo Building, Pittsburgh 22, Pa., for Bulletin FH-523

DRAVO CORPORATION

Sales Representatives in Principal Cities

Mfd. and sold in Canada by Marine Industries, Ltd. Sorel, Quebec

Export Associates: Lynch, Wilde & Co., Washington 9, D. C.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts, f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago) Base discount

Machine and Carriage Bolts

	Pct Off List Less Case C.
½ in. & smaller x 6 in. & shorter	27 33
9/16 & ⅝ in. x 6 in. & shorter...	29 40
¾ in. & larger x 6 in. & shorter..	26 37
All diam, longer than 6 in.	22 34
Lag, all diam, longer than 6 in..	28 39
Lag, all diam x 6 in. & shorter..	30 41
Plow bolts	40 —

Nuts, Cold Punched or Hot Pressed

(Hexagons or Square)

½ in. and smaller.....	25 37
9/16 to ⅝ in.	23 35
¾ to 1½ in. inclusive.....	23 35
1⅝ in. and larger.....	16 29

Semifinished Hexagon Nuts

(Less case lots)

	Pct Off List Reg	Hvy	Lt
½ in. and smaller.....	41	35	41
9/16 to ⅝ in.	36	30	36
¾ to 1½ in.	31	27	33
1⅝ in. and larger.....	21	17	..

In full case lots, 15 pct additional discount.

Stove Bolts

	Pct Off List
Packaged, steel, plain finish..	63
Packaged, plated finish.....	50
Bulk, plain finish**.....	69*

* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

** Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Large Rivets

(½ in. and larger) Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa. $7.25

Small Rivets

(7/16 in. and smaller) Pct Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham 43

Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright.....	60
¼ in. through ⅝ in. x 6 in. and shorter high C heat treated.....	54
Milled studs	23
Flat head cap screws, listed sizes....	24
Fillister head cap, listed sizes.....	43
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. and shorter	59

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon.....	4.50¢
0.41 to 0.60 carbon.....	5.95¢
0.61 to 0.80 carbon.....	6.55¢
0.81 to 1.05 carbon.....	8.50¢
1.06 to 1.35 carbon.....	10.80¢

Worcester, add 0.30¢.

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer.....	$8.10
Old range, nonbessemer.....	7.95
Mesabi, bessemer	7.85
Mesabi, nonbessemer	7.70
High phosphorus	7.70

After Jan. 25, 1950, increases or decreases in Upper Lake rail freight, dock handling charges and taxes are for buyers' account.

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
GRAPHITE		
17, 18, 20	60, 72	17.00¢
8 to 16	48, 60, 72	17.00¢
7	48, 60	18.64¢
6	48, 60	19.65¢
4, 5	40	20.48¢
3	40	21.53¢
2½	24, 30	22.05¢
2	24, 30	24.15¢
CARBON		
40	100, 110	7.65¢
35	65, 110	7.65¢
30	65, 84, 110	7.65¢
24	72 to 104	7.65¢
20	84, 90	7.65¢
17	60, 72	7.65¢
14	60, 72	8.16¢
10, 12	60	8.42¢
8	60	8.67¢

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct,		
Coatesville, Pa. (21)..	*26.50	
Washgtn, Pa. (39)....	*26.50	
Claymont, Del. (29)...	*26.50	
Conshohocken, Pa. (26)		*24.00
New Castle, Ind. (55).	*26.50	*25.50
Nickel-carbon		
10 pct, Coatsville (21)..	31.00	
Inconel-carbon		
10 pct, Coatesville (21)..	39.00	
Monel-carbon		
10 pct, Coatsville (21)..	32.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (60)		75.00
Aluminized steel sheets, hot dip, Butler, Pa. (7).....		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.00
18	4	1	—	5	$1.565
18	4	2	—	—	$1.13
1.5	4	1.5	8	—	71.5¢
6	4	2	6	—	76.5¢

High-carbon-chromium	57.5¢
Oil hardened manganese	32¢
Special carbon	29.5¢
Extra carbon	24.5¢
Regular carbon	21¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.00 to $14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$16.00 to $16.50
Foundry, oven coke	
Buffalo, del'd	$24.00
Chicago, f.o.b.	21.00
Detroit, f.o.b.	20.40
New England, del'd	23.40
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	21.25
Swedeland, Pa., f.o.b.	21.20
Painesville, Ohio, f.o.b.	21.90
Erie, del'd	$21.04 to 21.25
Cleveland, del'd	22.62
Cincinnati, del'd	22.71
St. Paul, f.o.b.	21.00
St. Louis, del'd	22.18
Birmingham, del'd	20.20

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net; Effective CaF$_2$ content:

70% or more	$37.00
60% or less	34.00

Prices Continued on Page 116

DYSON LARGE NUTS

your assurance
OF SAFETY

FOR
LARGE PRESSES
•
HEAVY MACHINERY
•
LARGE CONSTRUCTION
•
BRIDGES
•
LOCOMOTIVES
•
MARINE VESSELS
•
TURNTABLES

When you buy or specify a large nut, your first requirement is *safety*. Large nuts must be able to "take it" on heavy units of machinery and construction. To meet this requirement of safety, you couldn't select a finer large nut than DYSON. Every DYSON LARGE NUT is carefully forged on flat die hammers. The metal is compacted into a dense, strong mass so that the nut . . . and particularly the threads . . . will meet the severest shock or strain. Dyson employs the most modern hob milling equipment to thread its nuts . . . to give the thread a larger contact area with the bolt. Standardize on Dyson Large Nuts . . . fabricated to your exact specifications from carbon and alloy steels. Wire, write, or phone about your requirements.

OUR 80th YEAR
LARGE FORGED NUT DIVISION
JOS. DYSON & SONS, INC.
5143 ST. CLAIR AVE. · CLEVELAND 14, OHIO

Oxygen cuts electric furnace melting costs over $2,000 per month

WEHR STEEL COMPANY, of Milwaukee, Wisconsin, wanted to compare the refining of acid electric steel using oxygen with that of their usual method — the use of iron ore. They hoped to reduce refining costs without affecting the quality of the finished steel.

Clarence Nolan and W. R. Lysobey, Airco Technical Sales Representatives, were called in and suggested a series of test heats using Airco oxygen. On the basis of these tests, it was found that the cost of Airco 99.5% pure oxygen is about the same as the iron ore it replaced . . . *but,* the savings in ferro manganese, heat time, electrodes and power were appreciable — amounting to more than $1.00 per ton melted on a monthly tonnage of about 2,000 tons. Furthermore, the high quality of the steel was maintained.

Additional savings were also enjoyed when the problem of handling and storing iron ore was eliminated.

The Wehr Steel Company was most pleased with these results and have adopted oxygen refining of acid electric steel as standard practice.

For technical assistance on this unique refining process or a copy of our folder "Oxygen In The Electric Furnace," please write to your nearest Airco office.

AIRCO **AIR REDUCTION**
Offices in Principal Cities

TECHNICAL SALES SERVICE — ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

REFRACTORIES

	(F.o.b. works) Carloads, Per 1000
Fire Clay Brick	
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5)	$86.00
No. 1 Ohio	80.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	80.00
No. 2 Ohio	72.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	14.00
Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$86.00
Childs, Pa.	90.00
Hays, Pa.	91.00
Chicago District	95.00
Western Utah and Calif.	101.00
Super Duty, Hays, Pa., Athens, Tex., Chicago	106.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	15.00
Silica cement, net ton, bulk, Hays, Pa.	17.00
Silica cement, net ton, bulk, Ensley, Ala.	16.00
Silica cement, net ton, bulk, Chicago District	16.00
Silica cement, net ton, bulk, Utah and Calif.	22.50
Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Chester	$69.00
Magnesite Brick	
Standard, Baltimore	$91.00
Chemically bonded, Baltimore	80.00
Grain Magnesite	*St. ⅜-in. grain*
Domestic, f.o.b. Baltimore, in bulk fines removed	$56.00 to $57.00
Domestic, f.o.b. Chewelah, Wash., in bulk	33.00
in sacks	38.00
Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$13.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.4¢ to 9.0¢
Canadian sponge iron, del'd, in East	10.00¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	36.0¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	70.0¢ to $1.35
Aluminum	39.00¢
Brass, 10 ton lots	27.75¢ to 31.25¢
Copper, electrolytic	9.25¢ plus metal value
Copper, reduced	9.75¢ plus metal value
Cadmium, 100-199 lb	$2.95
Chromium, electrolytic, 99% min., and quantity	$3.50
Lead	6.5¢ plus metal value
Manganese	52.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	75.5¢
Nickel, annealed	81.5¢
Nickel, spherical, unannealed	78.5¢
Silicon	34.00¢
Solder powder	6.5¢ to 8.5¢ plus met. value
Stainless steel, 302	75.00¢
Tin	11.00¢ plus metal value
Tungsten, 99%	$2.90
Zinc, 10 ton lots	20.50¢ to 23.25¢

CAST IRON WATER PIPE

	Per net ton
6 to 24-in., del'd Chicago	$91.80 to $95.30
6 to 24-in., del'd N. Y.	91.00 to 92.00
6 to 24-in., Birmingham	78.00 to 82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	$108.50 to $113.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

Prices Continued on Page 119

FERROALLOYS

Ferromanganese
75-82% Mn. maximum contract base price, gross ton, lump size.
F.o.b. Birmingham $174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont. $172
F.o.b. Johnstown, Pa. $174
F.o.b. Sheridan, Pa. $172
F.o.b. Etna, Clairton, Pa. $175
$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.
Carload, bulk 10.45
Ton lots 12.05

Spiegeleisen
Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal
Contract basis, 2 in. x down, cents per pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.
Carload, packed 35.5
Ton lots 37.0

Electrolytic Manganese
F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 33
Ton lots 30
Less ton lots 32

Medium Carbon Ferromanganese
Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn. ..... 18.15¢

Low-Carbon Ferromanganese
Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese
Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.
Carload bulk 8.95
Ton lots 10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet. 10.30
Ton lots 11.90

Silvery Iron (electric furnace)
Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal
Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.
96% Si, 2% Fe 20.70
97% Si, 1% Fe 21.10

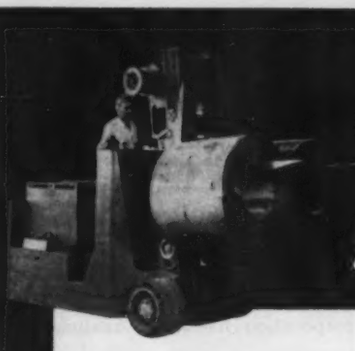
Silicon Briquets
Contract price, cents per pound of briquet bulk, delivered, 40% Si, 1 lb Si briquets.
Carload, bulk 6.30
Ton lots 7.90

Electric Ferrosilicon
Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.
25% Si ..... 17.00 75% Si 13.50
50% Si ..... 11.30 85% Si 14.65
90-95% Si 16.50

Calcium Metal
Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots ..	2.40	3.30	4.55

Prices Continued on Page 120



New MAYTAG Automatic Washer Plant Uses 14 BAKER TRUCKS

From receiving of raw materials to shipping of finished washers BAKER FORK TRUCKS play a vital role in keeping costs to a minimum

The new Maytag Automatic Washer plant at Newton, Iowa was designed to provide the most efficient movement and handling of materials. 14 Baker Fork Trucks play an important role.

For Example:

Handling coils of steel strip weighing from 7,000 to 10,000 pounds (top illustration) with a Baker Heavy Duty Fork Truck has made it practical to buy steel in full-width coils and slit them to required widths in their own plant.

Machined parts are received and stored in special parts bins—designed for easy access and visibility, and for safe high tiering due to built-in skids for handling with fork trucks. (See left, below).

Diecast metal is received in bundles of pigs, bound with steel strap in a manner to permit unloading and tiering with Baker 4,000 pound fork trucks without the use of skid platforms or pallets.

One operator with a Baker (light-weight, low-cost) Fork Truck loads cars with 80 to 100 finished machines in the time it would take four men with hand trucks to do the job. (See right, below).

Our material handling engineers are available for planning comparable savings in your plant.

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
1227 West 80th Street Cleveland 2, Ohio
In Canada: Railway & Power Engineering Corporation, Ltd.

Baker INDUSTRIAL TRUCKS

CAPITAL and MANUFACTURING FACILITIES AVAILABLE to GROWING BUSINESSES

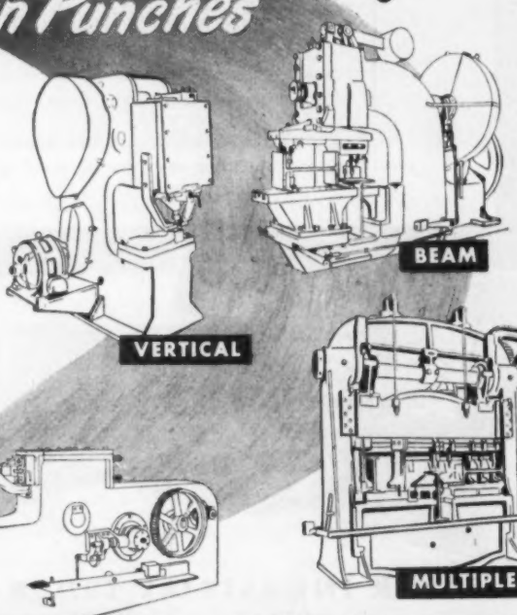
One of our clients desires to diversify its manufacturing operations. We believe there are a number of medium size enterprises in this country that have growth possibilities but lack the necessary resources either in capital or production facilities to realize their opportunities. While we desire to locate such companies with a net worth of around $5 million dollars, we would also be interested in companies with growth possibilities and net worth as low as $500,000.

Our client, a nationally known corporation, has ample financial resources; a large amount of available floor space located in the middle west, in modern factory buildings with ample general-purpose manufacturing facilities.

We will be glad to hear from anyone who is interested in such a combination. Any communications addressed to us in this matter will be held in confidence, if desired.

STEVENSON, JORDAN & HARRISON, INC.
MANAGEMENT ENGINEERS AND CONSULTANTS
19 WEST 44TH STREET, NEW YORK 18, N. Y.
CHICAGO • BUFFALO • CLEVELAND

THE TREND IS TO THOMAS *in Punches*



Made in a wide range of capacities to serve your most varied punching needs.

Send for bulletin on type you require.

THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH (23), PA.

24

PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

IRON AGE FOUNDED 1855 MARKETS & PRICES

Continued

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max Si.)

0.06% C	28.75	0.20% C	27.75
0.10% C	28.25	0.50% C	27.50
0.15% C	28.00	1.00% C	27.25
2.00% C			27.00
65-69% Cr, 4-9% C			20.50
62-66% Cr, 4-6% C, 6-9% Si.			21.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contrast price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% Max. C.	$1.09
0.50% max. C	1.05
.00 min. C	1.04

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 20.50¢ per lb of contained Cr plus 11.30¢ per lb of contained Si.

Bulk 1-in. x down, 20.65¢ per lb contained Cr plus 11.50¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.50
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Continued

Other Ferroalloys

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.65¢
Ton lots	9.05¢
Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo	96¢
Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb.	
Ton lots	$3.50
Less ton lots	3.55
Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta	$2.67
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo	$1.13
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	$1.28
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	$1.40
Less ton lots	$1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	$167.00
Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	95¢
bags, f.o.b. Washington, Pa., Langeloth, Pa.	94¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk, lump	11.00¢
Ton lots, bulk, lump	11.50¢
Less ton lots, lump	12.25¢
Vanadium pentoxide, 88-92% V_2O_5, contract basis, per pound contained V_2O_5	$1.20
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	6.60¢

Boron Agents

Contract prices per lb of alloy, del.	
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$4.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, Ti 15-21%, B 1-2%, Si 3-4%, Al 1-2%, C 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots, per pound	10.00¢
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	$1.20
F.o.b. Wash., Pa.; 100 lb, up	
10 to 14% B	.75
14 to 19% B	1.20
19% min. B	1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	$1.46
Less ton lots	1.57
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢

"Rodine" ushered in a new era in pickling. It has saved vast amounts of acid and metal all over the world.

RODINE®

- **SAVES ACID**
- **SAVES METAL**
- **SAVES MONEY**

"Rodine" more than pays for itself in savings of acid and metal. Specify "Rodine" for improved pickling production.

"Cuprodine"

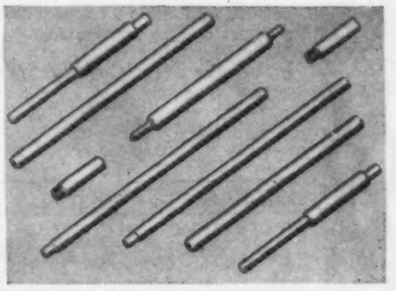
"Cuprodine" in a simple chemical immersion process coats both carbon and stainless steels with a thin, bright, adherent layer of copper. This coating prolongs die life and improves the drawing of wire, rod and tubing.

American Chemical Paint Co.
AMBLER PENNA

PAY LESS

for precision metal parts made by

TORRINGTON



Low cost for precision quality, fine finish, uniform heat treatment is assured by our high productive capacity and special equipment.

Typical of a wide variety of parts are special rollers, shafts, studs, dowel pins made to order. Chamfer, radius, taper, hemispherical and other styles of ends. Rollers from .014" to .500" diameter. Centerless ground .040" to .500"; diameter tolerance ±.0001". Finish as fine as 3 micro-inches. Dowel pins from .0625" to .3125".

We are also set up to make such parts as surgical and dental instruments, pen and pencil barrels, soldering iron cases, special needles, instrument shafts and pivots, screw driver and ice pick blades, knurled mandrels or spindles, etc.

Send your prints and specifications today for prompt quotation.

THE TORRINGTON COMPANY
Specialty Department
555 Field Street • Torrington, Conn.

Makers of
TORRINGTON NEEDLE BEARINGS

MUNDT
PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can *perforate almost any size perforation in any kind of metal or material required.* Send us your specifications.

Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

Write for New Catalog of Patterns

TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
59 FAIRMOUNT AVE. JERSEY CITY, N. J.

WHO...

makes precision "milled from the bar" screw machine products that stand up under hard usage . . . and whose uniformity and fine finish save assembly time and maintenance costs.

Wm. H. Ottemiller Co.
YORK, PENNA.

Cap Screws | Set Screws | Coupling Bolts | Milled Studs

. . . in all sizes and threads.

Versatility counts in
HOT DIP GALVANIZING

any size or shape product, any size order from the smallest to the largest

Excellent facilities for pickling and oiling

ENTERPRISE
GALVANIZING COMPANY
2525 E. Cumberland Street Philadelphia 25, Pa.

SAVE MONEY
ON PRESSED STEEL PARTS!

If you want to save money on pressed steel parts, call on Budd's wide experience in steel stampings of all kinds.

Like hundreds of manufacturers, you can take advantage of Budd "know-how" to lower production costs on blanks and stampings, in both regular grade and stainless steel. At your service Budd places the best-equipped machine shop—for both large and small dies—on the Atlantic seaboard.

Write today, sending a sample, blueprint or pencil sketch of your product, and let us quote you a price.

BUDD

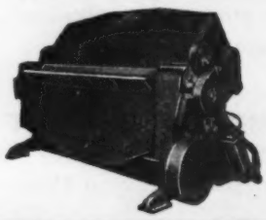
THE BUDD COMPANY
Dept. 16 Philadelphia 32, Pa.

PRESSES • FEEDS
AUTOMATIC EQUIPMENT
The VEO Press Company
HUDSON, NEW YORK

THE CLEVELAND STEEL TOOL CO.
Punches, Dies, Chisels, Rivet Sets
660 E. 82D St., Cleveland, O.
If it's RIVETED you KNOW it's safe

CHICAGO

STEEL PRESS BRAKES *and* HAND *and* POWER BENDING BRAKES



CRAFTSMEN IN
DIES—FORMING & PUNCHING
MANUFACTURERS OF
DOUBLE FOLDER BRAKES
SPECIAL BENDING BRAKES
OF ALL KINDS
MULTIPLE PUNCHES

DREIS & KRUMP MFG. CO.
7430 LOOMIS BLVD • CHICAGO 36, ILLINOIS

FOR ECONOMY—
FOR ACCURACY—
FOR DEPENDABILITY—

Specify WHITEHEAD Stampings
Suppliers to American industry for 46 years.
WRITE FOR YOUR CATALOG!

WHITEHEAD EST. 1903

WHITEHEAD STAMPING CO.
1669 W. LAFAYETTE BLVD., DETROIT 16, MICH.

STEEL FORGINGS

UPSET, DROP and COIN PRESSED
ANY ANALYSIS—ANY QUANTITY

Send us your blue prints for prices

ROCKFORD DROP FORGE CO.
2030 9th St.
ROCKFORD, ILL.

WEBB WIRE

STRENGTH UNIFORMITY DURABILITY

NEEDLE and STAINLESS

THE WEBB WIRE WORKS
NEW BRUNSWICK, N. J.
PHONE 2-4668-9

Increase Your Production of Small, Hard-to-make Parts

Precision Investment Casting

Send for our new booklet "Modern Precision Investment Casting." It's free.

New equipment and new materials make this process a dependable tool. Write us for equipment and supplies, process information, and casting sources.

Alexander Saunders & Co.
Precision Investment Casting Equipment and Supplies
95 BEDFORD STREET NEW YORK, N. Y.
WAtkins 4-8880

Cutting Off Machines for Sawing All Kinds of Metals

THE ESPEN-LUCAS MACHINE WORKS
FRONT AND GIRARD AVE., PHILADELPHIA, PENNA.

HAYWARD BUCKETS

Use this Electric Motor Clam Shell for rehandling bulk materials in Industrial Plants.

THE HAYWARD CO., 40-50 Church St., N.Y.

To Lower your Overhead..

BROWNING ELECTRIC TRAVELING CRANES AND HOISTS
up to 125-TON CAPACITY

VICTOR R. BROWNING & CO., INC. WILLOUGHBY (Cleveland), OHIO

GOSS and DE LEEUW

MULTIPLE SPINDLE
CHUCKING MACHINES
Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

"Perfect perforating"
SAYS ACCURATE AGGIE

When it comes to perforating—metal, masonite, paper, or any other material, check with Accurate Perforating Company. Accurate offers you a wide selection of perforating dies, quick and dependable service, best of all a price that's hard to beat. For complete information, write today for your free catalog on Accurate perforated materials.

ACCURATE PERFORATING COMPANY DEPT. A1
1101 S. KEDZIE · CHICAGO 12, ILLINOIS

BOILER ENGINEERING AND SUPPLY CO. INC.

TUBE & PIPE BENDING

4 INCH MAXIMUM DIA. PRECISION PRICES SUBMITTED

STEEL PLATE FABRICATION
BOILERS HEATERS TANKS
STACKS AND OTHER PLATE WORK
PHOENIXVILLE PENNA

AIR COMPRESSOR

1000 Cu. Ft. Worthington "Feather Valve," 18" x 11" x 14" two stage with 185 HP synchronous motor on shaft.

AUTOMATIC

4⅜" Conomatic 4 spindle, serial No. 2191K with reel, chip conveyor, extra equipment.

BORING MILLS

4½ bar Lucas No. 33. Table 46" x 64" Max. height 36", Max to outboard support 11'.

100" Niles Bement Pond. Extra heavy type. 2 swivel heads, power rapid traverse, 35 HP direct current motor.

BROACH

15 ton 36" stroke American vertical duplex surface with tilting type workholder.

DRILL

42 spindle, No. 816 Natco multiple with 18" x 48" drilling area and two box tables.

GEAR HOBBER

Type T Barber Colman. Designed for either straight or taper splines, helical or spur gears. Also type A and Nos. 3 & 12 Barber Colmans.

GRINDERS

6" x 18", No. 10 Brown & Sharpe "Electric Hydraulic" Three with and two without spindle oscillation. New 1940 and 1941.

10" x 36" Norton type C hydraulic with hydraulic quick in-feed. Serial No. C16458, new in 1942.

10" x 72" Norton type C hydraulic made at factory to swing 14". Serial No. 21750, new in 1944.

23" x 36" Norton type C with mechanical table traverse, hydraulic quick in-feed. Serial No. C18281, new 1943.

LATHE TURRET

No. 2FU Foster Fastermatic Serial No. 2FU529, new in 1944. Quite a little tooling.

MILLERS

Cincinnati Hydromatic Sizes: 3-24, 34-36, 4-36, 4-48, 5-48, 56-72 and 56-90.

PRESSES

1000 ton, No. 666 Toledo knuckle joint Coining. 2½" stroke, 18" shut height, bed 37" F to B x 31" R to L.

350 ton Clearing Crankless, model F1350-42, serial No. 45-11155P, new 1945. 20" stroke, 28" shut height, 36" x 42" bed.

600 ton Hamilton No. 2316½ eccentric shaft forging. Stroke 4"; shut height 16" bed 28" F to B x 23¾" R to L.

No. 506 Bliss on inclined legs with double roll feed and scrap cutter. About 126 tons. 3" stroke, 11½" shut height.

1000 ton Baldwin Southwark "Hy-Speed" hydraulic. 20" stroke, 56" daylight, bed 42" F to B x 54" R to L.

UPSETTERS

2" National. Serial No. 13213. Has suspended slides with long overarm guide. Has 15 HP motor.

4" Ajax. Serial No. 3156. Has twin drive gears, suspended slides, self contained backshaft, 30 HP motor.

MILES MACHINERY CO.
SAGINAW, MICH.

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

NISA President—H. E. Grant of the Tennessee Electric Motor Service, Nashville, Tenn., is the newly elected president of the National Industrial Service Assn. He was voted into office at the recent national NISA convention in Boston. This is the first photo released by NISA of their new national president for 1950-51.

H. E. Grant

Long Supply—Cleveland dealers report that older machines at the moment are in long supply. Price concessions on such items are being made readily to any prospective buyer. Some dealers are loaded with inventories of older machines, some of which would not find a ready market even in the event of another world war.

Pittsburgh Electrical Demand—Electrical apparatus is snapping out of its seasonal slump. Recent shut-downs and curtailments of operations in small mines is the reason for the slow activity. The latest upward spurt is caused, in part, by the flood in West Virginia that washed out considerable electrical equipment and created an emergency demand for replacements. Dealers here anticipate a pickup in demand from stepped up Government requirements.

Newark Activity—Most machinery dealers in this area report that business has been good for the past few months. July activity, from fair to good, is much improved over a year ago. As yet, only a few dealers report that the Korean situation has speeded up inquiries. Most claim a slight lull indicating timidity on the part of the metalworking producers. This they say is the pause before the storm. Producers, they feel, are waiting to find out what is going to happen. Dealers expect that mobilization orders from our government will again start the frenzied buying experienced during the last mobilization.

California NISA—The Northern California chapter of the National Industrial Service Assn. met recently at the El Jardin restaurant in San Francisco. Preceding the business session, a talk was presented by Mr. Davis of the Monarch Supply Co. on the new Adjusto-Speed motor developed by the Louis Allis Co. The electronic controls used for speed regulation were explained and questions answered.

Cleveland Activity—Demand for most used and rebuilt machine tools is temporarily in the doldrums here. This is largely a result of the plant vacation period, now in full swing. The present sales pattern is about what most dealers predicted a month ago. It is believed that business will not pick up appreciably until after Labor Day. However, some interim improvement as a result of the Korean situation is a possibility. Certain types of late equipment are active, namely chucking machines, metal forming machinery, and toolroom equipment.

Foreign Business—Detroit used machinery dealers on the whole are not hopeful that government-sponsored aid for foreign machinery buyers will help much to sustain the Detroit volume. High shipping costs plus the interminable delays in financing have discouraged many local dealers who were once confident that sales opportunities in foreign markets would be open to them as a result of the U. S. government aid programs.

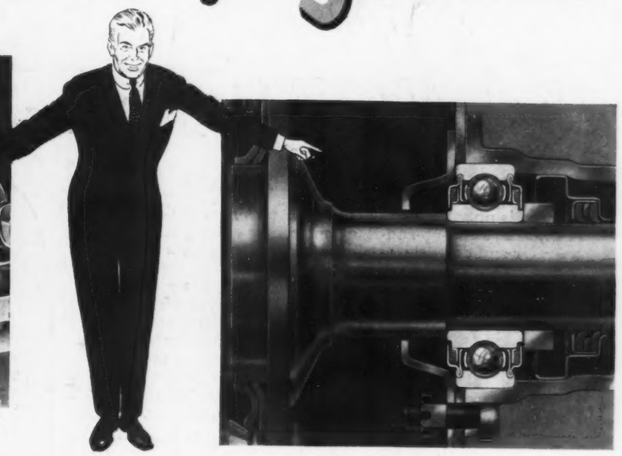
THE IRON AGE
THE NATIONAL METALWORKING WEEKLY August 3, 1950

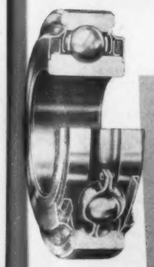
New Departure Lubricated-for-life Rear Wheel Ball Bearings
unsurpassed
for dependability and freedom from service

UNIV. OF MICHIGAN
AUG 4 1950
EAST ENGINEERING LIBRARY

Built to be forgotten!

Proved by 16 years and billions of miles in actual service.





Nothing Rolls Like a Ball . . .
NEW DEPARTURE
BALL BEARINGS
New Departure • Division of General Motors • Bristol, Connecticut

Today millions of cars are rolling easier, smoother—on New Departure lubricated-for-life rear wheel ball bearings.

Proof against neglect or improper greasing, these self-sealed bearings need no adjustment—*ever!* They're built to be forgotten!

103FC

AIR COMPRESSOR

1000 Cu. Ft. Worthington "Feather Valve," 18" x 11" x 14" two stage with 185 HP synchronous motor on shaft.

AUTOMATIC

4⅜" Conomatic 4 spindle, serial No. 2191K with reel, chip conveyor, extra equipment.

BORING MILLS

4½ bar Lucas No. 33. Table 46" x 64" Max. height 36", Max to outboard support 11'.

100" Niles Bement Pond. Extra heavy type. 2 swivel heads, power rapid traverse, 35 HP direct current motor.

BROACH

15 ton 36" stroke American vertical duplex surface with tilting type workholder.

DRILL

42 spindle, No. B16 Natco multiple with 18" x 48" drilling area and two box tables.

GEAR HOBBER

Type T Barber Colman. Designed for either straight or taper splines, helical or spur gears. Also type A and Nos. 3 & 12 Barber Colmans.

GRINDERS

6" x 18", No. 10 Brown & Sharpe "Electric Hydraulic" Three with and two without spindle oscillation. New 1940 and 1941.

10" x 36" Norton type C hydraulic with hydraulic quick in-feed. Serial No. C16458, new in 1942.

10" x 72" Norton type C hydraulic made at factory to swing 14". Serial No. 21750, new in 1944.

23" x 36" Norton type C with mechanical table traverse, hydraulic quick in-feed. Serial No. C18281, new 1943.

LATHE TURRET

No. 2FU Foster Fastermatic Serial No. 2FU529, new in 1944. Quite a little tooling.

MILLERS

Cincinnati Hydromatic Sizes: 3-24, 34-36, 4-36, 4-48, 5-48, 56-72 and 56-90.

PRESSES

1000 ton, No. 666 Toledo knuckle joint Coining. 2½" stroke, 18" shut height, bed 37" F to B x 31" R to L.

350 ton Clearing Crankless, model F1350-42, serial No. 45-11155P, new 1945. 20" stroke, 28" shut height, 36" x 42" bed.

600 ton Hamilton No. 2316½ eccentric shaft forging. Stroke 4"; shut height 16" bed 28" F to B x 23¾" R to L.

No. 506 Bliss on inclined legs with double roll feed and scrap cutter. About 126 tons. 3" stroke, 11½" shut height.

1000 ton Baldwin Southwark "Hy-Speed" hydraulic. 20" stroke, 56" daylight, bed 42" F to B x 54" R to L.

UPSETTERS

2" National. Serial No. 13213. Has suspended slides with long overarm guide. Has 15 HP motor.

4" Ajax. Serial No. 3156. Has twin drive gears, suspended slides, self contained backshaft, 30 HP motor.

MILES MACHINERY CO.
SAGINAW, MICH.

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

NISA President—H. E. Grant of the Tennessee Electric Motor Service, Nashville, Tenn., is the newly elected president of the National Industrial Service Assn. He was voted into office at the recent national NISA convention in Boston. This is the first photo released by NISA of their new national president for 1950-51.

H. E. Grant

Long Supply—Cleveland dealers report that older machines at the moment are in long supply. Price concessions on such items are being made readily to any prospective buyer. Some dealers are loaded with inventories of older machines, some of which would not find a ready market even in the event of another world war.

Pittsburgh Electrical Demand—Electrical apparatus is snapping out of its seasonal slump. Recent shut-downs and curtailments of operations in small mines is the reason for the slow activity. The latest upward spurt is caused, in part, by the flood in West Virginia that washed out considerable electrical equipment and created an emergency demand for replacements. Dealers here anticipate a pickup in demand from stepped up Government requirements.

Newark Activity—Most machinery dealers in this area report that business has been good for the past few months. July activity, from fair to good, is much improved over a year ago. As yet, only a few dealers report that the Korean situation has speeded up inquiries. Most claim a slight lull indicating timidity on the part of the metalworking producers. This they say is the pause before the storm. Producers, they feel, are waiting to find out what is going to happen. Dealers expect that mobilization orders from our government will again start the frenzied buying experienced during the last mobilization.

California NISA—The Northern California chapter of the National Industrial Service Assn. met recently at the El Jardin restaurant in San Francisco. Preceding the business session, a talk was presented by Mr. Davis of the Monarch Supply Co. on the new Adjusto-Speed motor developed by the Louis Allis Co. The electronic controls used for speed regulation were explained and questions answered.

Cleveland Activity—Demand for most used and rebuilt machine tools is temporarily in the doldrums here. This is largely a result of the plant vacation period, now in full swing. The present sales pattern is about what most dealers predicted a month ago. It is believed that business will not pick up appreciably until after Labor Day. However, some interim improvement as a result of the Korean situation is a possibility. Certain types of late equipment are active, namely chucking machines, metal forming machinery, and toolroom equipment.

Foreign Business—Detroit used machinery dealers on the whole are not hopeful that government-sponsored aid for foreign machinery buyers will help much to sustain the Detroit volume. High shipping costs plus the interminable delays in financing have discouraged many local dealers who were once confident that sales opportunities in foreign markets would be open to them as a result of the U. S. government aid programs.